



# RESULTS OF THE COOPERATIVE UNIFORM SOYBEAN TESTS

## PART I. NORTH CENTRAL STATES

\*\*\*\*

1964

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## INTRODUCTION

The U. S. Regional Soybean Laboratory was organized in 1936 under the Bankhead-Jones Act, as a cooperative project by the U. S. Department of Agriculture and the twelve Agricultural Experiment Stations of the North Central Region. In 1942, the work of the Laboratory was expanded to include cooperation with twelve Agricultural Experiment Stations in the Southern Region also. At present, six other states and two provinces in Canada are also cooperating informally in the Laboratory research program, which is directed toward the breeding of improved varieties and strains of soybeans for industrial use and the obtaining of fundamental information necessary to the efficient development of strains to meet specific needs.

The purpose of the Uniform Soybean Tests is to evaluate critically the best of the experimental soybean lines being developed through the cooperative breeding research program. Ten of these tests, corresponding to ten maturity groups, have been established, with Test 00 including the very early strains for the northern fringe of the present area of soybean production. Uniform Tests 0 through IV, respectively, include strains adapted to locations farther south in the North Central States and areas of similar latitude. In general, each group is arranged to include strains differing in maturity by ten days or less.

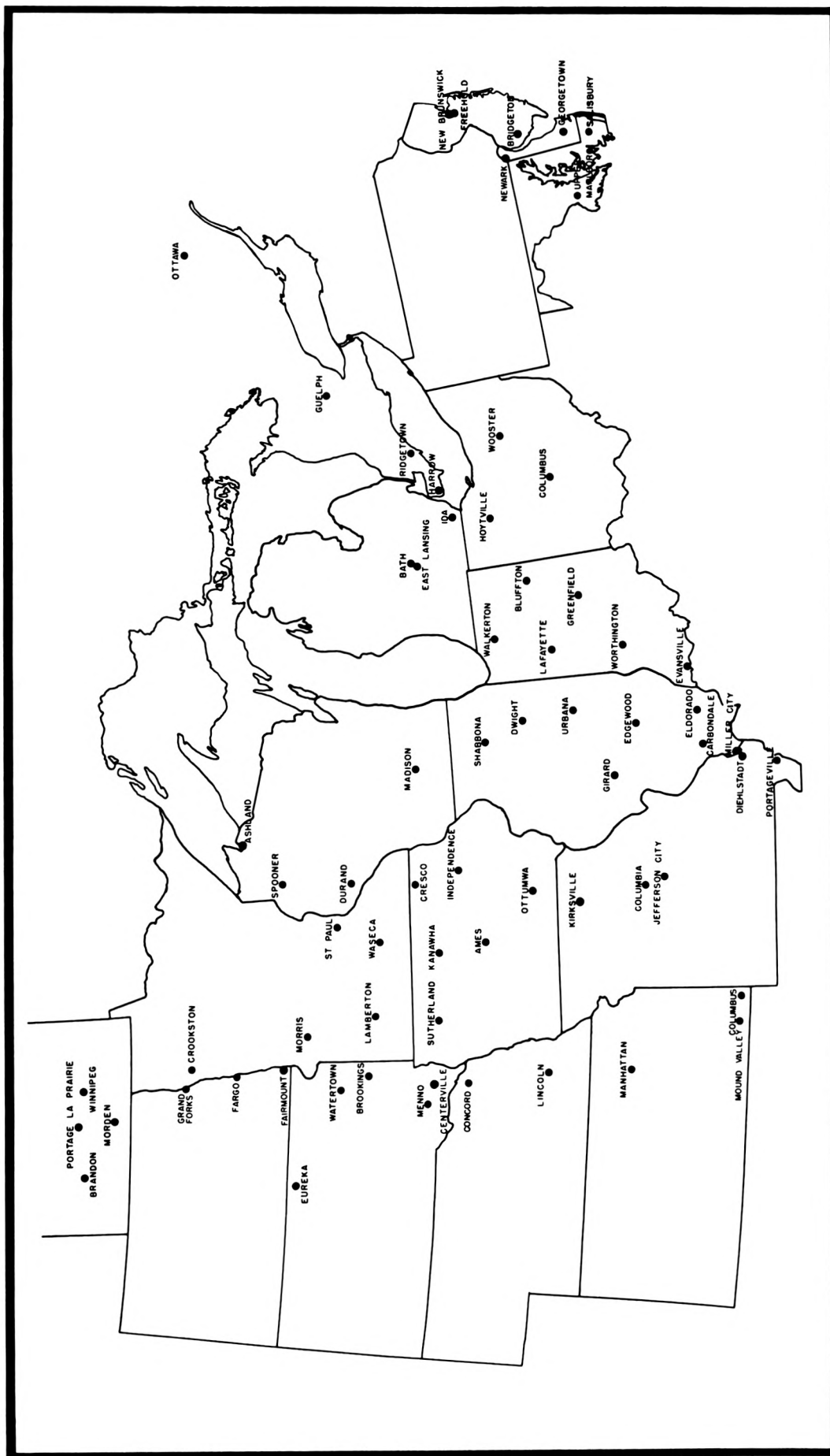
The summary of performance of strains in the first six Uniform Tests is included in Part I of this report. Information on the last four tests, which include strains adapted to the southern part of the United States, is contained in Part II, which is issued separately.

Most of the Uniform Tests in the North Central Region are grown in rod-row size plots, using four replications. Extra strains differing in maturity from the test strains are separated from the rest of the test by border rows to minimize competition. As the result of recent studies showing that fewer locations are necessary to measure chemical composition with the same precision as yield, the number of locations from which chemical data were obtained was reduced to about half of the test locations. Uniform Preliminary Tests are grown at a limited number of locations throughout the region to screen the best experimental strains for maturity and general agronomic performance before they are entered in the Uniform Tests. At most locations these nurseries are grown in rod-row plots with two replications.

Two new soybean varieties were released to seed producers in the summer of 1964, Portage of Group 00 maturity, and Wayne of Group III maturity. History on the development and performance of each strain is included in this report.

In 1956 the maturity range for each Uniform Test was established to reduce the spread within each group and the overlap between groups. These maturity ranges are redefined in the following table, based on the current reference varieties:

<u>Maturity Group</u>	<u>Reference Variety</u>	<u>Range in days (expected means)</u>
00	Acme	-2 to +6
0	Merit	-4 to +4
I	Chippewa	-2 to +6
II	Harosoy 63	-3 to +5
III	Shelby	-4 to +4
IV	Clark	-1 to +9



MAP OF THE NORTH CENTRAL STATES SHOWING LOCATION OF THE COOPERATIVE UNIFORM SOYBEAN TESTS

UNIFORM TEST LOCATIONS - 1964

Location	Cooperator	Uniform Tests						Preliminary Tests					
		00	0	I	II	III	IV	00	0	I	II	III	IV
Ottawa, Ont.	L. S. Donovan, Central Exp. Farm	x	x					x	x				
Guelph, Ont.	J. W. Tanner, Ont. Agr. Col.	x	x										
Ridgetown, Ont.	J. D. Curtis and W. W. Snow, W. Ont. Agr. School			x	x	x		x	x	x			
Harrow, Ont.	L. J. Anderson, Canada D. A. Res. Sta.		x	x	x	x			x	x			
Freehold, N. J.	J. C. Anderson, N. J. A.E.S.				x	x							
Newark, Del.	R. H. Cole, Del. A.E.S.					x	x						
Georgetown, Del.	Univ. Substation					x	x					x	x
Upper Marlboro, Md.	E. H. Beyer, Univ. of Md. To- bacco Farm						x						x
Hoytville, Ohio	Northwestern Substa.			x	x	x			x	x	x		
Wooster, Ohio	Ohio A.E.S.			x	x	x			x	x	x		
Columbus, Ohio	P. E. Smith, Ohio State Univ.		x	x	x	x	x		x	x	x		
Bath, Mich.	Muck Experiment Sta.	x						x					
East Lansing, Mich.	H. M. Brown, Mich. A.E.S.	x	x	x	x			x	x	x	x		
Dundee, Mich.	Russell P. Houpt & Son			x	x								
Walkerton, Ind.	Frank Pulver			x	x						x		
Bluffton, Ind.	Gerald Bayless					x	x						
Lafayette, Ind.	O. W. Luetkemeier, Purdue A.E.S.		x	x	x					x	x		
Greenfield, Ind.	Mrs. R. Roney				x	x							
Worthington, Ind.	Frederic Sloan				x	x	x					x	x
Evansville, Ind.	B. Wagner					x	x						x
Ashland, Wis.	G. H. Tenpas and M. L. Jones, Ashland Exp. Farm		x						x				
Spooner, Wis.	C. O. Rydberg, Spooner Exp. Farm		x						x				
Madison, Wis.	J. H. Torrie, Wis. A.E.S.			x	x				x	x			
Shabbona, Ill.	R. R. Bell, N. Ill. Exp. Field			x	x				x				
Dwight, Ill.	Harry Henderson			x	x						x		
Urbana, Ill.	C. H. Farnham, Ill. A.E.S.					x	x			x	x		
Girard, Ill.	Lloyd Brothers					x	x					x	
Edgewood, Ill.	John Wilson					x	x	x					
Eldorado, Ill.	Marshall Grisham					x	x	x					x
Carbondale, Ill.	D. R. Browning, Southern Ill. U.					x	x	x					x
Miller City, Ill.	M. B. Patton							x					x
Crookston, Minn.	Freeman Johnson		x										
Morris, Minn.	Roy L. Thompson			x									
St. Paul, Minn.	R. L. Cooper, Univ. of Minn.		x	x					x	x	x		
Lamberton, Minn.	W. W. Nelson			x	x								
Waseca, Minn.	John R. Thompson			x	x						x		
Cresco, Iowa	Howard Co. Exp. Assoc.			x									
Sutherland, Iowa	Galva-Primghar Exp. Farm				x								
Kanawha, Iowa	Northern Iowa Exp. Assoc.			x	x					x	x		
Independence, Iowa	Carrington-Clyde Exp. Assoc.				x								
Ames, Iowa	Iowa Agr. Exp. Sta.				x	x					x	x	
Ottumwa, Iowa	A. E. Newquist					x							x
Columbia, Mo.	Mo. Agr. Exp. Sta.				x	x	x				x	x	

UNIFORM TEST LOCATIONS - 1964 (Continued)

Location	Cooperator	Uniform Tests						Preliminary Tests					
		00	0	I	II	III	IV	00	0	I	II	III	IV
Portageville, Mo.	Arnold Matson, Mo. Delta Center						x						x
Winnipeg, Man.	B. R. Stefansson, Univ. of Man.	x						x					
Brandon, Man.	H. Gross, Exp. Farm	x											
Morden, Man.	John Giesbrecht, Exp. Farm	x						x					
Fargo, N. D.	R. E. Bothun, State Univ. Sta.	x						x					
Eureka, S. D.	S. D. North Central Substa.	x	x					x	x				
Watertown, S. D.	S. D. Agr. Exp. Sta.	x	x					x	x				
Brookings, S. D.	C. J. Franzke, S. D. A.E.S.			x						x			
Centerville, S.D.	S. D. Agr. Exp. Sta.				x						x		
Concord, Nebr.	J. H. Williams, Nebr. A.E.S.				x						x		
Powhattan, Kans.	Kans. Agr. Exp. Sta.						x	x				x	x
Manhattan, Kans.	E. L. Mader, Kans. A.E.S.						x	x				x	x
Mound Valley, Kans.	Oliver G. Russ, Branch Exp. Sta.						x						
Grand Junction, Colo.	Carl Barnes, Western Slope Br. Exp. Sta.						x						
Ontario, Ore.	L. A. Fitch, Malheur Br. Exp. Sta.	x						x	x				

## METHODS

All Uniform and Preliminary Tests are planted in replicated single rod-row plots with four replications for the Uniform Tests and two replications for the Preliminary Tests. Usually 18 to 20 feet of row is planted and only 16 to 17 feet harvested. Seeds are planted on the basis of 200 viable seeds per row.

Yield is measured after the seeds have been dried to a uniform moisture content and is reported in bushels per acre.

Maturity is taken as the date when approximately 95% of the pods are ripe and most of the leaves have dropped. Green stems are not to be considered in determining maturity but should be noted separately. Maturity is expressed as days earlier (-) or later (+) than the average of a standard reference variety. Reference varieties used for the Uniform Tests are as follows: Test 00, Acme; Test 0, Merit; Test I, Chippewa; Test II, Harosoy 63; Test III, Shelby; and Test IV, Clark.

Lodging notes are taken at maturity and recorded on a scale of 1 to 5 according to the following degrees of lodging:

- 1 - Almost all plants erect
- 2 - All plants leaning slightly or a few plants down
- 3 - All plants leaning moderately, or 25% to 50% of the plants down
- 4 - All plants leaning considerably, or 50% to 80% of the plants down
- 5 - Almost all plants down

Height is reported as the average length in inches of plants from the ground to the tip of the stem at time of maturity.

Seed Quality is rated from 1 to 5 according to the following scale:

- |               |          |               |
|---------------|----------|---------------|
| 1 - Very good | 3 - Fair | 5 - Very poor |
| 2 - Good      | 4 - Poor |               |

The factors considered in estimating seed quality are: seed development, wrinkling, damage, and objectionable color for the variety.

Seed Weight is recorded as weight (in grams) per 100 seeds.

Chemical Composition of the seed is determined on samples submitted to the Laboratory headquarters in Urbana. Percentages of oil and protein are determined on a composite sample of all replications for each strain and are expressed on a moisture-free basis.

Calculating Summary Means. In cases where the lodging and seed quality notes are all the same at a location, indicating no expression of strain differences, these locations are not included in the mean for these traits. Where the C.V. of yield is greater than 20% at a location or where yields are unusually low, this location is not included in the strain means.

Disease Reactions are listed according to the Soybean Disease Classification Standards, March 1955, unless otherwise specified. The disease reaction is listed 1-5. The state where the test was made is identified in the column heading, and a small



letter "a" or "n" under the state signifies artificial or natural infection. When the reaction is given by letter instead of numbers, R signifies resistant, S stands for susceptible, and I for intermediate. Seg. indicates that a strain is segregating for disease reaction.

Shattering scores are based on estimates of the percent of open pods as follows:

- |                        |                         |                        |
|------------------------|-------------------------|------------------------|
| 1 - No shattering      | 3 - 10 to 25% shattered | 5 - Over 50% shattered |
| 2 - 1 to 10% shattered | 4 - 25 to 50% shattered |                        |

Testing History. The number of years in Uniform Test given in the tables includes the current year's test and excludes years in Preliminary Tests or Uniform Tests of another group. The previous regional test is abbreviated: U.T. 0 for Uniform Test 0, P.T. III for Uniform Preliminary Test III, etc., and only the most recent previous test is listed. The year(s) are listed only if the previous test did not immediately precede its entry in this test or if the strain was in the previous test for more than one year.

Descriptive Traits are abbreviated as follows:

- Flower color: P = purple, W = white  
 Pubescence color: T = tawny, G = gray, Lt = light tawny  
 Pod color: Br = brown, T = tan  
 Seed coat luster: D = dull, S = shiny  
 Seed coat color: Y = yellow, G = gray, Lg = light gray  
 Hilum color: G = gray, T = tan, Y = yellow, Bl = black, Br = brown, Bf = buff, Ib = imperfect black, Lbf = light buff

Strain Designation. In order to simplify strain designations and indicate state of origin for entries in the Uniform Tests, the following code letters to precede strain numbers have been agreed upon in meetings of experiment station agronomists collaborating with the U. S. Regional Soybean Laboratory.

<u>State</u>	<u>Code Letter</u>	<u>State</u>	<u>Code Letter</u>	<u>State</u>	<u>Code Letter</u>
Alabama	Au	Maine	Me	Ohio	H
Arkansas	R	Morden, Manitoba	CM	Oklahoma	Ok
California	B	Winnipeg, Manitoba	UM	Ontario, Canada	O
Delaware	UD	Maryland	Md	South Carolina	SC
Florida	F	Michigan	E	South Dakota	SD
Georgia	Ga	Minnesota	M	Tennessee	UT
Illinois	L	Mississippi	D	Texas	TS
Indiana	C	Missouri	S	Virginia	V
Iowa	A	Nebraska	U	Wisconsin	W
Kansas	K	North Carolina	N	Two or More States	SL
Louisiana	La	North Dakota	ND		

It is suggested that states cooperating in these Uniform Tests use these letters to designate their strains.



UNIFORM TEST 00, 1964

Strain	Originating Agency	Origin	Generation Composited
Acme	Central Exp. Farm, Ottawa, Ont.	Sel. from Pagoda	
Flambeau	Wis. Agr. Exp. Sta.	Introduction from Russia	
Portage (UM4)	Univ. of Manitoba, Winnipeg, Man.	Acme x Comet	F <sub>5</sub>
M384	Minn. A.E.S. & U.S.R.S.L.	Renville x Capital	F <sub>5</sub>
M388	Minn. A.E.S. & U.S.R.S.L.	Renville x Capital	F <sub>5</sub>
M412	Minn. A.E.S. & U.S.R.S.L.	P.I. 132207	
057-2921	Central Exp. Farm, Ottawa, Ont.	Blackhawk x Capital	F <sub>7</sub>
UM14	Univ. of Manitoba, Winnipeg, Man.	052-903 x Flambeau	F <sub>5</sub>
UM15	Univ. of Manitoba, Winnipeg, Man.	052-903 x Flambeau	F <sub>5</sub>

Identification of Parent Strains

052-903	Selection 753-1 by Sven A. Holmberg, Norrkoping, Sweden; same as P.I. 194654.
P.I. 132207	No. D.14 from Dr. L. Koch, Zeist, Netherlands.

This year appeared to favor the yields of early lines in this test relative to the late ones, although the reverse is true in most years. UM14 and UM15, the two top yielders, are also the earliest strains in the test, averaging a day or two earlier than Acme. Most of the strains are higher in oil content than Acme and Flambeau, but P.I. 132207 is distinctly low in oil and high in protein.

The three-year means show Portage to have an advantage in yield over Acme and 057-2921 to be superior to Flambeau in erectness and oil content.

PORTAGE

Portage is quite similar to Acme in most characteristics. However, in a large number of tests, seed yields from Portage have been somewhat higher than those from Acme.

The plants are erect with a bushy habit of growth and are resistant to lodging. Pubescence is grey, flower color is purple, and the seed is yellow with a yellow hilum. The history of its development follows:

- 1952 - Acme x Merit (0-48-36) cross made at Winnipeg, Manitoba, F<sub>1</sub> grown in greenhouse.
- 1953 to 1956 - F<sub>2</sub>, F<sub>3</sub>, F<sub>4</sub> and F<sub>5</sub> lines were grown in the soybean nursery at Winnipeg. Individual plants were selected each year.
- 1957 - Progeny tested in Preliminary Yield Trial at Winnipeg.

- 1958 to 1964 - Tested in Cooperative Soybean Test in Manitoba as S56-142.
- 1959 - Entered in Uniform Preliminary Test 00, as UM4.
- 1960 to 1964 - Included in Uniform Test 00.
- 1964 - UM4 named Portage and licensed by Plant Products Division, Department of Agriculture, Ottawa, in April 1964. Thirty-six bushels of registered seed were distributed to four seed growers (9 bus. each) in Manitoba to produce registered seed in 1964. Approximately 545 bushels of this seed are expected to be available to growers for 1965 planting. Breeder's seed is to be produced in 1965.

Table 1. Regional testing history and descriptive data for the strains in Uniform Test 00, 1964.

Strain	Years in Uniform Test 00	Previous Regional Test	Flower Color	Pubes- cence Color	Pod Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Shattering**	
									1101	M10
Acme	7	None	P	G	Br	S	Y	Y	3.5	4.0
Flambeau	7	43-56 U.T. 0	P	T	Br	S	Lg	Bl	2.0	1.5
Portage	5	P.T. 00	P	G	Br	D	Y	Y	5.0	4.5
M384	2	P.T. 00	P+W	G	Br	S	Y	Y	3.0	2.0
M388	2	P.T. 00	W	G	Br	S	Y	Y	1.0	2.0
M412	1	P.T. 00	P	G	Br	S	Y	Y	3.0	2.5
057-2921	3	60-61 U.T. 0	P+W	G	Br	D	Y	Y	3.0	2.5
UM14	1	P.T. 00	P	T	Br	S	Lg	Bl*	4.0	2.5
UM15	1	P.T. 00	P	T	Br	S	Lg	Bl	3.0	2.5

\*Segregating normal and abnormal (imperfect abscission) hilum.

\*\*Average of 2 replications at Urbana, Illinois, in Field 1101 planted May 6 and in Field M10 planted June 3. Notes taken 1 month after maturity.

Table 2. Summary of data for Uniform Test 00, 1964.

Strain	Yield	Rank	Matu- rity <sup>1</sup>	Lodg- ing	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	8	8	6	6	7	6	6	5	5
Acme	21.2	7	0	1.4	26	3.0	17.0	39.5	18.2
Flambeau	22.9	4	+4.7	2.8	27	3.3	15.4	41.2	17.7
Portage	22.2	5	-0.5	1.4	26	3.1	16.0	38.4	18.8
M384	24.1	3	+4.3	1.8	24	3.2	14.5	39.4	19.2
M388	22.1	6	+6.2	2.2	26	3.4	14.5	39.2	19.8
M412	20.0	9	+5.7	1.8	27	3.1	17.5	43.7	16.4
057-2921	20.6	8	+5.2	1.4	28	2.9	12.3	38.9	19.8
UM14	24.5	2	-1.3	1.8	25	2.8	17.3	39.6	19.3
UM15	25.0	1	-1.7	1.9	26	2.9	16.7	39.8	19.3

<sup>1</sup>Days earlier (-) or later (+) than Acme which matured September 10, 110 days after planting.

Table 3. Disease data for Uniform Test 00, 1964.

Strain	Bacterial Blight	Bacterial Pustule	Phytophthora Rot	Frogeye Ind.	Chocolate Spot <sup>2</sup>
	<u>Ill.</u> <u>a<sup>1</sup></u>	<u>Ia.</u> <u>a</u>	<u>Ind.</u> <u>a</u>	<u>Race 2</u> <u>a</u>	<u>Ia.</u> <u>a</u>
Acme	4	-	Seg.	5	5
Flambeau	3	5	S	3	4
Portage	4	5	S	3	4
M384	3	5	S	5	4
M388	3	5	S	5	4
M412	3	5	S	5	4
057-2921	2	5	R	5	3
UM14	2	5	R	3	4
UM15	3	5	R	3	4

<sup>1</sup>a = artificial inoculation; n = natural infection.

<sup>2</sup>A bacterial disease producing symptoms similar to those of brown spot. The organism is unnamed.

Table 4. Yield and yield rank for Uniform Test 00, 1964.

Strain	Mean of 8 Tests	Ot- tawa Ont.	Guelph Ont.	East		Ash- land Wis.	Crooks- ton Minn.	St. Paul Minn.	Winni- peg Man.	Bran- don Man.	Mor- den Man.
				Bath Mich. <sup>1</sup>	Lan- sing Mich.						
				*						*	
Acme	21.2	28.6	27.8	28.6	20.8	28.9	15.3	15.0	16.2	14.6	16.7
Flambeau	22.9	31.9	30.8	39.8	27.1	26.6	19.2	16.2	18.6	12.0	12.5
Portage	22.2	23.6	32.0	31.5	25.9	27.8	15.5	14.7	18.7	14.4	19.6
M384	24.1	27.3	32.9	31.4	28.3	28.8	21.5	16.3	17.8	17.1	20.0
M388	22.1	27.6	24.3	32.8	27.3	26.8	21.0	15.0	18.5	16.0	16.5
M412	20.0	26.9	30.6	28.0	28.8	20.0	16.0	13.4	13.2	14.4	11.4
057-2921	20.6	27.3	27.9	26.2	27.7	24.7	20.0	13.3	10.8	12.3	12.8
UM14	24.5	29.2	31.3	28.7	27.8	32.2	18.0	13.1	22.6	16.6	21.6
UM15	25.0	32.0	31.3	30.8	28.7	28.3	20.0	16.4	22.7	13.7	20.9
Coef. of Var. (%)		10.9	10.4	10.0	8.6	7.7	--	--	8.0	22.5	11.2
L.S.D. (5%)		4.5	10.0	4.5	3.4	2.9	--	--	2.0	N.S.	2.7
Row Spacing (In.)		38	27	32	24	24	24	36	24	36	36

Yield Rank

Acme	7	4	8	7	9	2	9	4	7	4	5
Flambeau	4	2	5	1	7	7	5	3	4	9	8
Portage	5	9	2	3	8	5	8	6	3	5	4
M384	3	6	1	4	3	3	1	2	6	1	3
M388	6	5	9	2	6	6	2	4	5	3	6
M412	9	8	6	8	1	9	7	7	8	5	9
057-2921	8	6	7	9	5	8	3	8	9	8	7
UM14	2	3	3	6	4	1	6	9	2	2	1
UM15	1	1	3	5	2	4	3	1	1	7	2

\*Not included in the mean.

<sup>1</sup>Irrigated.

Table 5. Maturity, days earlier (-) or later (+) than Acme, and lodging for Uniform Test 00, 1964.

Strain	Mean of 6 Tests	Ot- tawa Ont.	Guelph Ont.	Bath Mich. <sup>1</sup>	East Lan- sing Mich.	Ash- land Wis.	Crooks- ton Minn.	St. Paul Minn.	Winni- peg Man. <sup>2</sup>	Bran- don Man.	Mor- den Man. <sup>2</sup>
				*					*	*	*
Acme	0	0	0	0	0	0	0	0	0	0	0
Flambeau	+4.7	+15	-3	+8	+4	+6	+4	+2	+7	+10	--
Portage	-0.5	0	-4	0	0	+3	+1	-3	+1	- 1	0
M384	+4.3	+14	-6	+2	+2	+7	+3	+6	+7	0	--
M388	+6.2	+13	+4	+2	+3	+7	+4	+6	+6	+ 7	--
M412	+5.7	+16	-5	+2	+6	+8	+3	+6	+7	+11	--
057-2921	+5.2	+19	-5	+4	+1	+7	+5	+4	--	+ 9	--
UM14	-1.3	+ 4	-7	+2	+1	-3	+1	-4	+3	- 2	0
UM15	-1.7	+ 4	-8	+2	+1	-4	+1	-4	+3	- 1	0
Date planted	5-23	5-15	5-29	5-22	5-28	5-29	5-26	5-14	5-21	5-13	5-13
Acme matured	9-10	9-6	9-21	9-10	9-9	9-20	9-13	8-25	9-17	9-14	9-16
Days to mature	110	114	115	111	104	114	110	103	119	124	126

	Mean of 6 Tests	Lodging								
				*		*			*	
Acme	1.4	1.8	1.3	3.0	1.0	1.5	1.0	1.0	1.5	1.0
Flambeau	2.8	2.9	4.8	4.0	2.0	2.3	1.0	1.0	3.5	1.0
Portage	1.4	1.3	3.3	2.0	1.0	1.0	1.0	1.0	1.0	1.0
M384	1.8	1.4	3.0	4.0	2.0	1.0	1.0	1.0	2.5	1.0
M388	2.2	1.8	4.3	4.0	2.0	1.8	1.0	1.2	2.2	1.0
M412	1.8	2.4	3.0	4.0	1.0	1.3	1.0	1.0	1.8	1.0
057-2921	1.4	1.0	1.5	4.0	1.0	1.0	1.0	1.0	3.0	1.0
UM14	1.8	1.8	2.5	4.0	2.0	1.3	1.0	1.0	2.3	1.0
UM15	1.9	2.0	2.5	4.0	2.0	1.3	1.0	1.0	2.3	1.0

\*Not included in the mean.

<sup>1</sup>Irrigated.

<sup>2</sup>Missing dates due to frost before maturity.

Table 6. Plant height and seed quality for Uniform Test 00, 1964.

Strain	Mean of 7 Tests	Ottawa Ont.	Guelph Ont.	Bath Mich. <sup>1</sup>	East Lansing Mich.	Ash- land Wis.	Crooks- ton Minn.	St. Paul Minn.	Bran- don Man.	Morden Man.
				*					*	
Acme	26	27	33	34	21	27	17	25	24	31
Flambeau	27	30	34	47	25	25	19	24	28	33
Portage	26	25	35	34	24	25	19	22	27	31
M384	24	25	32	41	25	26	20	24	24	33
M388	26	25	34	40	23	24	20	23	27	32
M412	27	29	35	39	27	25	18	25	26	32
057-2921	28	25	34	40	27	28	22	26	27	34
UM14	25	25	32	38	25	24	18	20	27	32
UM15	26	27	33	38	25	24	20	21	26	32

	Mean of 6 Tests	Seed Quality								
				*	*				*	
Acme	3.0	2.5	2.0	2.0	3.0	3.0	3.8	3.5	3.0	3.0
Flambeau	3.3	2.5	3.0	3.0	3.0	2.0	3.5	4.5	4.0	4.0
Portage	3.1	2.5	3.0	2.0	3.0	4.0	3.5	3.8	3.0	2.0
M384	3.2	2.5	2.0	3.0	3.0	4.0	3.8	3.8	4.0	3.0
M388	3.4	2.5	4.0	2.0	3.0	4.0	3.8	3.8	4.0	2.0
M412	3.1	2.5	2.0	2.0	3.0	3.0	3.5	3.5	4.0	4.0
057-2921	2.9	2.0	1.0	2.0	3.0	2.0	3.5	3.8	4.0	5.0
UM14	2.8	2.5	2.0	3.0	3.0	2.0	3.5	3.8	3.0	3.0
UM15	2.9	2.5	2.0	3.0	3.0	2.0	3.8	3.8	4.0	3.0

\*Not included in the mean.

<sup>1</sup>Irrigated.

Table 7. Percentages of protein and oil for Uniform Test 00, 1964.

Strain	Mean of 5 Tests	Ottawa Ont.	East Lansing Mich.	Ashland Wis.	Crooks- ton Minn.	Morden Man.
Acme	39.5	39.7	41.7	38.4	38.1	39.6
Flambeau	41.2	41.6	42.5	40.4	39.8	41.9
Portage	38.4	38.5	39.6	38.1	37.1	38.9
M384	39.4	41.0	40.6	38.0	37.7	39.7
M388	39.2	39.0	41.2	38.3	37.4	40.2
M412	43.7	43.4	45.6	43.4	41.6	44.3
057-2921	38.9	39.1	40.3	38.3	37.5	39.5
UM14	39.6	40.0	41.7	38.3	38.2	39.9
UM15	39.8	39.5	41.4	39.4	38.5	40.2

	Mean of 5 Tests	Percentage of Oil				
Acme	18.2	17.4	19.8	18.5	18.3	17.2
Flambeau	17.7	18.0	18.8	18.1	17.0	16.5
Portage	18.8	19.4	20.5	18.7	18.0	17.2
M384	19.2	19.4	20.5	19.0	19.1	18.0
M388	19.8	20.3	21.1	19.2	20.2	18.0
M412	16.4	16.5	17.6	16.3	16.0	15.6
057-2921	19.8	20.8	20.2	19.4	19.6	18.8
UM14	19.3	20.1	20.0	18.8	18.8	18.6
UM15	19.3	20.2	20.1	18.9	19.1	18.2

Table 8. Three-year summary of data for Uniform Test 00, 1962-1964.

Strain	Yield	Rank	Matu- rity <sup>1</sup>	Lodg- ing	Height	Seed Quality	Seed Weight	Seed Composition	
No. of Tests	27	27	21	21	26	21	22	Protein	Oil
Acme	25.4	4	0	1.4	27	2.5	17.4	38.8	19.2
Flambeau	28.3	2	+6.7	3.0	31	2.8	15.6	39.4	18.9
Portage	26.8	3	+0.2	1.5	27	2.6	17.1	38.1	19.6
057-2921	28.5	1	+6.7	1.8	31	2.7	12.9	37.9	20.1

<sup>1</sup>Days earlier (-) or later (+) than Acme which matured September 10, 109 days after planting.

Table 9. Three-year summary of yield and yield rank for Uniform Test 00, 1962-1964.

Strain	Mean of 27 Tests	Ot- tawa Ont.	Guelph Ont.	Bath Mich.	East	Ash- land Wis.	Crooks- St. Minn.	Portage	Winni- peg Man.	Bran- don Man.	Mor- den Man.	
					Lan- sing Mich.			la Prairie Man.				
Years Tested		1962- 1964	1962- 1964	1963- 1964	1962- 1964	1962- 1964	1962- 1964	1963- 1964	1962- 1963	1963- 1964	1962- 1964	
Acme	25.4	31.2	29.0	17.6	25.9	29.6	17.7	19.2	30.5	22.0	30.9	21.0
Flambeau	28.3	35.6	32.6	26.5	29.5	28.6	23.7	19.9	31.7	26.2	32.5	22.7
Portage	26.8	30.3	29.0	20.7	29.0	30.5	19.4	19.6	32.3	23.7	33.9	22.5
057-2921	28.5	35.0	28.9	17.4	30.0	27.9	22.9	19.0	37.8	21.2	37.0	23.9

Yield Rank												
Acme	4	3	2	3	4	2	4	3	4	3	4	4
Flambeau	2	1	1	1	2	3	1	1	3	1	3	2
Portage	3	4	2	2	3	1	3	2	2	2	2	3
057-2921	1	2	4	4	1	4	2	4	1	4	1	1



UNIFORM PRELIMINARY TEST 00 - 1964

Strain	Originating Agency	Origin	Generation Composited
Acme	Central Exp. Farm, Ottawa, Ont.	Sel. from Pagoda	
Flambeau	Wis. Agr. Exp. Sta.	Introduction from Russia	
CM1	Canada Dept. of Agr., Morden, Man.	Crest x L48-7289	F <sub>5</sub>
CM2	Canada Dept. of Agr., Morden, Man.	Crest x L48-7289	F <sub>5</sub>
CM3	Canada Dept. of Agr., Morden, Man.	Acme x Monroe	F <sub>5</sub>
CM4	Canada Dept. of Agr., Morden, Man.	Acme x Monroe	F <sub>5</sub>
CM5	Canada Dept. of Agr., Morden, Man.	Acme x Monroe	F <sub>5</sub>
M385	Minn. A.E.S. & U.S.R.S.L.	Capital x Renville	F <sub>5</sub>
M386	Minn. A.E.S. & U.S.R.S.L.	Capital x Renville	F <sub>5</sub>
M399	Minn. A.E.S. & U.S.R.S.L.	Harosoy x Norchief	F <sub>5</sub>
M424	Minn. A.E.S. & U.S.R.S.L.	Acme x Hardome	F <sub>5</sub>
M425	Minn. A.E.S. & U.S.R.S.L.	Acme x Chippewa	F <sub>5</sub>
M431	Minn. A.E.S. & U.S.R.S.L.	Grant x Acme	F <sub>5</sub>
M433	Minn. A.E.S. & U.S.R.S.L.	Acme x Chippewa	F <sub>5</sub>
060-3396	Central Exp. Farm, Ottawa, Ont.	Sel. from P.I. 180501	
UM16	Univ. of Manitoba, Winnipeg, Man.	Acme x Comet	F <sub>5</sub>
UM17	Univ. of Manitoba, Winnipeg, Man.	Crest x Flambeau	F <sub>5</sub>

Identification of Parent Strains

L48-7289 Sel. from Seneca x Richland, in Uniform Test II in 1950-51.  
P.I. 180501 Sel. made in Germany from Strain 238 (of Manchurian origin) x P.I.  
54616. P.I. 54616 was introduced in 1921 from Kungchuling, Chekiang  
Province, China, through B. W. Skvortzow, Harbin, Manchuria.

There was a rather small range in mean yield in this test, but a number of the experimental strains seem to be improved over the check in yield potential. All of them averaged higher in oil content than the checks, but are correspondingly reduced in protein percentage. Most of the new strains are late and should be compared to Flambeau. All have better lodging resistance and some have greater height than Flambeau. The data indicate that several strains are too late for this group, and should be in Group 0.

Some interesting observations on shattering at Urbana were made in addition to those reported in Table 10. On November 20, about two months after maturity, the rows in field M10 were again observed and, as expected, most strains were severely shattered. However, M385, M386, and 060-3396 showed almost no shattering; Flambeau and M425 were about 25% shattered; and all other Group 00 (Uniform and Preliminary) strains were from 50% to completely shattered. The extreme shattering resistance of these three lines, if consistent in other environments, would be a valuable trait in a commercial variety.

Table 10. Descriptive data for the strains in Uniform Preliminary Test 00, 1964.

Strain	Flower Color	Pubes- cence Color	Pod Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Shattering*	
							1101	M10
Acme	P	G	Br	S	Y	Y	4.5	4.5
Flambeau	P	T	Br	S	Y	Bl	1.5	1.5
CM1	P	G	Br	D	Y	Ib	3.5	2.5
CM2	P	G	Br	S	Y	G+Y	3.5	2.5
CM3	P	G	Br	S	Y	Ib+Bf	2.5	3.0
CM4	P	G	Br	D	Y	Bf	2.0	1.0
CM5	W	G	Br	D	Y	Y	4.5	2.5
M385	W	T	Br	S	Y	Y	1.0	1.0
M386	P	G	Br	S	Y	Ib	1.0	1.5
M399	P	G	Br	D	Y	Y	2.5	2.0
M424	P	G	Br	S	Y	Y	2.5	3.0
M425	P	G	Br	S	Y	G	2.0	2.0
M431	W	G	Br	S	Y+G	Y+G	3.0	2.0
M433	P	T	Br	S+D	Y	Y+Br	2.0	2.0
060-3396	P	T	Br	S	Y	Br	1.0	1.5
UM16	P	G	Br	D	Y	Y	3.5	3.0
UM17	P	G	Br	S	Y	G+Y	4.0	2.5

\*Average of 2 replications at Urbana, Illinois, in Field 1101 planted May 6 and in Field M10 planted June 3. Notes taken 1 month after maturity.

Table 11. Summary of data for Uniform Preliminary Test 00, 1964.

Strain	Yield	Rank	Matu- rity <sup>1</sup>	Lodg- ing	Height	Seed Quality	Seed Weight	Seed Composition	
No. of Tests	5	5	3	5	4	4	4	Protein	Oil
								4	4
Acme	19.4	16	0	1.2	26	2.8	17.7	41.0	18.5
Flambeau	21.1	9	+ 5.7	2.3	26	3.5	14.6	42.5	17.8
CM1	23.1	1	+ 4.7	1.3	30	3.4	15.6	39.9	19.1
CM2	20.2	14	+ 5.0	1.7	28	3.1	15.5	42.0	18.8
CM3	21.1	9	+ 5.3	2.0	28	3.3	16.5	41.7	19.8
CM4	21.2	8	+10.0	1.9	30	3.4	18.4	41.2	19.7
CM5	20.8	12	+ 4.7	1.4	28	2.6	16.7	41.2	19.6
M385	21.8	6	+ 6.3	2.0	26	3.5	12.2	39.9	20.6
M386	22.0	4	+ 7.3	1.6	26	2.9	13.6	40.8	19.9
M399	19.2	17	+ 9.7	2.0	28	3.4	14.7	40.8	20.1
M424	22.0	4	+ 3.7	1.5	28	2.5	15.9	40.5	19.8
M425	22.2	3	+ 3.3	1.5	27	3.0	14.0	40.7	19.1
M431	22.3	2	+ 3.0	1.3	25	2.9	13.8	40.5	19.2
M433	21.5	7	- 0.3	1.5	26	3.0	13.8	41.1	18.8
060-3396	21.1	9	+ 5.0	2.0	24	2.8	14.2	40.5	19.8
UM16	20.2	14	+ 3.7	1.2	26	2.8	19.4	41.3	19.4
UM17	20.7	13	+ 8.7	1.8	27	2.8	19.1	42.1	19.0

<sup>1</sup>Days earlier (-) or later (+) than Acme which matured September 3, 107 days after planting.

Table 12. Disease data for Uniform Preliminary Test 00, 1964.

Strain	Bacterial	Brown	Phytophthora	Frogeye
	Blight	Stem Rot	Rot	Ind.
	<u>Ill.</u> <u>a</u> <sup>1</sup>	<u>Ill.</u> <u>n</u> <sup>1</sup>	<u>Ind.</u> <u>a</u>	<u>Race 2</u> <u>a</u>
Acme	3	2	Seg.	5
Flambeau	3	3	S	3
CM1	3	1	Seg.	5
CM2	2	3	Seg.	4
CM3	2	3	S	4
CM4	2	2	S	4
CM5	2	1	Seg.	3
M385	3	3	S	5
M386	3	2	S	4
M399	2	1	S	5
M424	3	2	S	4
M425	2	1	S	3
M431	3	1	S	3
M433	3	3	S	4
060-3396	2	3	S	5
UM16	3	3	S	4
UM17	3	3	S	3

<sup>1</sup>a = artificial inoculation; n = natural infection.

Table 13. Yield for Uniform Preliminary Test 00, 1964.

Strain	Mean of 5 Tests	Rank	Ottawa Ont.	Bath Mich. <sup>1</sup>	East Lansing Mich.	Ash- land Wis.	St. Paul Minn.	Winni- peg Man.	Morden Man.	On- tario Ore. <sup>1</sup>
				*		*				*
Acme	19.4	16	26.5	26.4	18.7	27.3	15.0	18.8	17.8	45.5
Flambeau	21.1	9	32.4	30.0	21.7	29.4	16.2	22.0	13.2	--
CM1	23.1	1	32.2	29.5	22.7	28.9	16.1	24.0	20.5	50.7
CM2	20.2	14	29.7	20.6	19.6	26.6	14.6	20.2	17.1	42.2
CM3	21.1	9	25.5	24.3	24.1	25.5	15.4	21.3	19.1	46.8
CM4	21.2	8	36.1	26.1	23.5	30.0	15.2	16.8	14.6	45.4
CM5	20.8	12	30.4	25.6	21.0	22.1	17.2	16.4	19.0	49.5
M385	21.8	6	34.6	35.2	24.0	25.5	15.0	14.9	20.4	50.0
M386	22.0	4	37.3	31.4	23.0	24.9	15.6	17.3	16.8	48.8
M399	19.2	17	34.9	32.9	22.4	22.9	13.6	13.3	11.6	50.5
M424	22.0	4	32.9	22.5	23.0	23.8	15.2	20.1	18.7	52.1
M425	22.2	3	33.2	26.2	22.0	26.7	12.6	21.1	22.3	49.8
M431	22.3	2	34.0	30.4	20.7	25.7	14.2	22.0	20.5	51.8
M433	21.5	7	33.2	31.2	19.1	24.3	14.1	21.3	19.8	47.1
060-3396	21.1	9	36.8	27.2	23.5	15.6	14.7	13.9	16.6	43.1
UM16	20.2	14	29.4	28.5	21.2	27.4	16.6	17.5	16.3	51.9
UM17	20.7	13	28.5	23.7	21.5	21.8	15.5	20.2	17.9	46.1
Coef. of Var. (%)			14.3	11.2	5.5	21.9	--	5.6	13.1	4.7
L.S.D. (5%)			N.S.	4.4	2.6	N.S.	--	1.6	4.7	4.7
Row Spacing (In.)			38	32	24	24	36	24	36	20

\*Not included in the mean.

<sup>1</sup>Irrigated. Four replications at Bath, Michigan.

Table 14. Yield rank for Uniform Preliminary Test 00, 1964.

Strain	Mean of 5 Tests	Ottawa Ont.	Bath Mich. <sup>1</sup>	East Lansing Mich.	Ash- land Wis.	St. Paul Minn.	Winni- peg Man.	Morden Man.	On- tario Ore. <sup>1</sup>
			*		*				*
Acme	16	16	10	17	5	10	10	10	13
Flambeau	9	10	6	10	2	3	2	16	--
CM1	1	11	7	7	3	4	1	2	4
CM2	14	13	17	15	7	13	7	11	16
CM3	9	17	14	1	9	7	4	6	11
CM4	8	3	12	3	1	8	13	15	14
CM5	12	12	13	13	15	1	14	7	8
M385	6	5	1	2	9	10	15	4	6
M386	4	1	3	5	11	5	12	12	9
M399	17	4	2	8	14	16	17	17	5
M424	4	9	16	5	13	8	9	8	1
M425	3	7	11	9	6	17	6	1	7
M431	2	6	5	14	8	14	2	2	3
M433	7	7	4	16	12	15	4	5	10
060-3396	9	2	9	3	17	12	16	13	15
UM16	14	14	8	12	4	2	11	14	2
UM17	13	15	15	11	16	6	7	9	12

\*Not included in the mean.

<sup>1</sup>Irrigated.

Table 15. Maturity, days earlier (-) or later (+) than Acme, for Uniform Preliminary Test 00, 1964.

Strain	Mean of 3 Tests	Ottawa Ont.	Bath Mich. <sup>1</sup>	East Lansing Mich.	Ash- land Wis.	St. Paul Minn.	Winni- peg Man. <sup>2</sup>	Morden Man. <sup>2</sup>	On- tario Ore. <sup>1</sup>
			*		*		*	*	*
Acme	0	0	0	0	0	0	0	0	0
Flambeau	+ 5.7	+12	+8	+3	+8	+2	+6	--	--
CM1	+ 4.7	+11	+1	0	+3	+3	+3	+1	+ 2
CM2	+ 5.0	+11	0	+1	+7	+3	+3	+1	+ 3
CM3	+ 5.3	+12	+1	+1	+7	+3	+3	+1	+ 3
CM4	+10.0	+14	+2	+9	+7	+7	+5	+1	+ 6
CM5	+ 4.7	+10	0	+3	+6	+1	+2	+1	+ 3
M385	+ 6.3	+ 8	0	+5	+6	+6	--	--	+ 2
M386	+ 7.3	+ 9	+1	+7	+7	+6	--	--	+ 2
M399	+ 9.7	+19	+8	+6	+7	+4	--	--	+17
M424	+ 3.7	+ 5	0	+2	+4	+4	+2	+1	+ 4
M425	+ 3.3	+ 7	0	+2	-3	+1	+1	0	+ 2
M431	+ 3.0	+ 6	+1	+2	-2	+1	+2	-1	- 2
M433	- 0.3	+ 2	0	+1	-4	-4	+1	0	- 1
060-3396	+ 5.0	+ 8	0	+3	+5	+4	--	--	+ 3
UM16	+ 3.7	+ 8	0	+1	+2	+2	+2	+2	+ 3
UM17	+ 8.7	+12	+1	+7	+5	+7	+3	+2	+ 5
Date planted	5-19	5-15	5-22	5-28	5-29	5-14	5-21	5-13	5-13
Acme matured	9-3	9-7	9-10	9-9	9-21	8-25	9-17	9-17	9-3
Days to mature	107	115	111	104	115	103	119	127	113

\*Not included in the mean.

<sup>1</sup>Irrigated.

<sup>2</sup>Missing dates due to frost before maturity.





UNIFORM TEST 0 - 1964

Strain	Originating Agency	Origin	Generation Composited
Grant	Wis. A.E.S. & U.S.R.S.L.	Lincoln x Seneca	F6
Merit	Central Exp. Farm, Ottawa, Ont.	Blackhawk x Capital	F8
Norchief	Wis. A.E.S. & U.S.R.S.L.	Hawkeye x Flambeau	F4
M387	Minn. A.E.S. & U.S.R.S.L.	Renville x Capital	F5
M389	Minn. A.E.S. & U.S.R.S.L.	Capital x M10	F5
M391	Minn. A.E.S. & U.S.R.S.L.	Capital x Renville	F5
M406	Minn. A.E.S. & U.S.R.S.L.	Harosoy x Norchief	F5
M417	Minn. A.E.S. & U.S.R.S.L.	Lincoln x Mandarin (Ottawa)	F5
M422	Minn. A.E.S. & U.S.R.S.L.	Renville x Capital	F5
0-4323	Research Station, Harrow, Ont.	Capital x Hardome	F7
056-2678	Central Exp. Farm, Ottawa, Ont.	Blackhawk x Capital	F7
057-2826	Central Exp. Farm, Ottawa, Ont.	Adams x A3K-884	F12
W1S-191	Wis. A.E.S. & U.S.R.S.L.	Norchief x Clark	F7
W1S-294	Wis. A.E.S. & U.S.R.S.L.	Norchief x Harosoy	F7

Identification of Parent Strains

A3K-884	Sel. from Mukden x Richland, progenitor of Blackhawk, in Uniform Test I in 1945-48.
M10	Sel. from Lincoln (2) x Richland, in Uniform Test I in 1949-51.

The three-year summary in Table 23 includes three check varieties with average yield increasing with later maturity, and three experimental strains. 0-4323, the earliest of the three, has outyielded Norchief and has done as well or better than Merit, was taller than all three check varieties, resisted lodging, but averaged poorer in seed quality. The other two strains had increased plant height but did not outyield the check variety of comparable maturity.

M417 was tested in Uniform Test I last year, and is being increased for possible release. In 1964, it did not yield as well as might be expected of a strain of its maturity, averaging less than Grant, but it did show improved lodging resistance over Grant.

The remaining strains yielded about as expected for their maturity, but some had greater height than the checks and improved lodging resistance. Most of them tended to have poorer seed quality but about the same composition. The extreme strain x location interaction for yield this year makes selection rather hazardous.

Table 16. Regional testing history and descriptive data for the strains in Uniform Test 0, 1964.

Strain	Years in Uniform Test 0	Previous Regional Test	Flower Color	Pubes- cence Color	Pod Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Shattering*	
									1101	M10
Grant	15	P.T. 0	W	Lt	Br	S	Y	Bl	3.0	3.0
Merit	7	P.T. 0	W	G	Br	D	Y	Bf	1.0	1.0
Norchief	15	None	P	T	Br	D	Y	Bl	1.5	2.5
M387	1	63 U.T. 00	P	G	Br	D	Y	Y	1.5	4.5
M389	2	P.T. 0	P	G	Br	D	Y	Y	1.0	1.0
M391	2	P.T. 0	P	T	Br	S	Y	Y	1.0	2.5
M406	1	P.T. 0 & I	P	G	Br	D	Y	Y	1.5	2.5
M417	1	63 U.T. I	W	G	Br	S	Y	Y	2.0	4.0
M422	1	P.T. 00	W	G	Br	S	Y	Y	1.5	5.0
O-4323	4	P.T. 0	P	T	Br	S	Y	Y	1.0	2.5
O56-2678	3	P.T. 0	W	T	Br	S	Y	Y	1.5	3.0
O57-2826	3	P.T. 0	W	G	Br	S	Y	Bf	3.5	5.0
W1S-191	1	P.T. 0	P	T	Br	D	G	Bl	1.0	2.0
W1S-294	1	P.T. 0	P	G	Br	D	Y	Y	2.0	2.0

\*Average of 2 replications at Urbana, Illinois, in Field 1101 planted May 6 and in Field M10 planted June 3. Notes taken 1 month after maturity in 1101 and about 2 months after maturity on November 20 in M10.

Table 17. Summary of data for Uniform Test 0, 1964.

Strain	Yield	Rank	Matu- rity <sup>1</sup>	Lodg- ing	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	11	11	9	8	11	11	8	7	7
Grant	29.4	1	+4.0	2.2	29	2.0	16.7	40.4	19.3
Merit	26.2	9	0	1.6	30	2.0	14.5	39.2	20.3
Norchief	25.4	12	-1.2	1.8	27	2.2	16.6	40.4	19.6
M387	25.2	13	-3.0	1.6	29	2.4	13.9	38.5	20.2
M389	26.2	9	+0.1	1.8	27	2.2	15.7	40.3	20.0
M391	27.1	6	+2.3	1.9	32	2.3	16.6	39.7	20.4
M406	28.7	2	+2.0	2.1	31	2.3	19.5	39.9	19.5
M417	28.0	3	+6.2	1.9	30	2.3	17.7	40.6	19.8
M422	26.3	8	-1.0	1.3	28	2.5	15.2	40.4	19.9
0-4323	24.4	14	-5.0	2.0	34	2.6	14.3	40.8	19.7
056-2678	25.5	11	+1.4	2.0	35	2.4	14.4	40.9	19.5
057-2826	27.5	5	+3.1	2.0	32	2.3	16.2	39.8	19.5
W1S-191	27.8	4	+2.1	1.8	30	2.3	16.6	41.3	19.7
W1S-294	26.7	7	+0.1	1.5	31	2.3	15.6	40.1	19.6

<sup>1</sup>Days earlier (-) or later (+) than Merit which matured September 17, 117 days after planting.

Table 18. Disease data for Uniform Test 0, 1964.

Strain	Bacterial	Bacterial	Phytophthora	Frogeye	Chocolate
	Blight	Pustule	Rot	Ind.	Spot <sup>2</sup>
	<u>Ill.</u> <u>a<sup>1</sup></u>	<u>Ia.</u> <u>a</u>	<u>Ind.</u> <u>a</u>	<u>Race 2</u> <u>a</u>	<u>Ia.</u> <u>a</u>
Grant	3	4	S	5	2
Merit	3	5	R	5	3
Norchief	3	4	S	5	3
M387	4	5	S	5	3
M389	3	5	S	5	4
M391	2	5	S	5	4
M406	2	5	S	5	5
M417	3	5	S	4	3
M422	3	5	S	5	3
O-4323	2	5	S	4	4
056-2678	1	5	S	5	3
057-2826	2	4	S	5	4
WIS-191	2	5	S	5	5
WIS-294	3	5	S	5	4

<sup>1</sup>a = artificial inoculation; n = natural infection.

<sup>2</sup>A bacterial disease producing symptoms similar to those of brown spot. The organism is unnamed.

Table 19. Yield and yield rank for Uniform Test 0, 1964.

Strain	Mean of 11 Tests	Ottawa Ont.	Guelph Ont.	Ridge- town Ont.	Harrow Ont.	Colum- bus Ohio
Grant	29.4	39.5	31.7	46.9	35.8	36.4
Merit	26.2	35.7	27.8	40.6	24.2	29.8
Norchief	25.4	34.8	27.7	40.7	25.9	27.5
M387	25.2	30.9	31.7	36.1	25.0	32.1
M389	26.2	35.0	33.0	38.8	28.7	31.0
M391	27.1	37.3	30.0	38.4	29.8	35.9
M406	28.7	36.9	29.1	45.6	31.0	35.9
M417	28.0	37.8	28.2	42.0	37.3	34.9
M422	26.3	33.1	34.1	37.1	23.9	34.0
0-4323	24.4	32.7	26.9	36.8	27.2	32.9
056-2678	25.5	35.7	27.7	39.5	28.8	32.0
057-2826	27.5	35.0	30.2	44.0	29.6	41.1
W1S-191	27.8	32.6	34.4	43.5	34.7	36.7
W1S-294	26.7	37.7	28.8	36.9	29.2	35.6
Coef. of Var. (%)		7.7	10.3	5.1	12.6	9.9
L.S.D. (5%)		3.9	9.8	2.8	5.3	4.8
Row Spacing (In.)		38	27	24	40	28

	Yield Rank					
Grant	1	1	4	1	2	3
Merit	9	6	11	7	13	13
Norchief	12	10	12	6	11	14
M387	13	14	4	14	12	10
M389	9	8	3	9	9	12
M391	6	4	7	10	5	4
M406	2	5	8	2	4	4
M417	3	2	10	5	1	7
M422	8	11	2	11	14	8
0-4323	14	12	14	13	10	9
056-2678	11	6	12	8	8	11
057-2826	5	8	6	3	6	1
W1S-191	4	13	1	4	3	2
W1S-294	7	3	9	12	7	6

\*Not included in the mean.

1Irrigated.

Table 19. (Continued)

Strain	East Lansing Mich.	Spooner Wis. <sup>1</sup>	Morris Minn.	Fargo N.D.	Eureka S.D.	Water- town S.D.	On- tario Ore. <sup>1</sup> *
Grant	40.0	28.9	18.1	21.6	12.3	12.2	45.9
Merit	32.6	32.0	18.7	23.2	13.2	10.9	49.8
Norchief	29.9	29.3	18.6	20.7	13.9	10.5	42.0
M387	32.3	30.5	16.8	19.0	13.7	9.3	--
M389	32.1	32.3	17.3	18.4	12.9	9.1	48.4
M391	37.7	26.8	18.2	20.1	12.2	11.9	44.8
M406	37.3	31.7	20.2	21.5	14.9	11.9	54.7
M417	38.7	28.2	16.8	22.3	13.0	8.9	48.9
M422	32.5	30.1	19.0	21.2	13.6	10.6	48.9
O-4323	33.2	31.5	13.8	17.2	9.6	6.7	50.1
O56-2678	33.3	27.2	18.0	17.8	11.8	8.4	--
O57-2826	33.2	26.4	18.6	20.8	12.6	11.3	46.3
WLS-191	35.0	28.5	18.6	20.3	11.6	10.2	42.1
WLS-294	32.8	32.2	18.5	19.9	12.6	9.0	51.2
Coef. of Var. (%)	6.0	11.1	--	8.9	12.0	6.9	5.0
L.S.D. (5%)	2.9	N.S.	--	2.5	3.3	1.5	4.1
Row Spacing (In.)	24	36	40	40	42	42	20

	Yield Rank						
Grant	1	9	9	3	10	1	9
Merit	10	3	3	1	5	5	4
Norchief	14	8	4	7	2	7	12
M387	12	6	12	11	3	9	--
M389	13	1	11	12	7	10	7
M391	3	13	8	9	11	2	10
M406	4	4	1	4	1	2	1
M417	2	11	12	2	6	12	5
M422	11	7	2	5	4	6	5
O-4323	7	5	14	14	14	14	3
O56-2678	6	12	10	13	12	13	--
O57-2826	7	14	4	6	8	4	8
WLS-191	5	10	4	8	13	8	11
WLS-294	9	2	7	10	8	11	2

Table 20. Maturity, days earlier (-) or later (+) than Merit, and lodging for Uniform Test 0, 1964.

Strain	Mean of 9 Tests	Ottawa Ont.	Guelph Ont.	Ridge- town Ont.	Harrow Ont.	Colum- bus Ohio
Grant	+4.0	+ 9	+4	0	+4	+4
Merit	0	0	0	0	0	0
Norchief	-1.2	- 1	-3	0	-5	-1
M387	-3.0	- 9	-5	0	-7	-4
M389	+0.1	- 1	-1	+3	0	-2
M391	+2.3	+ 2	+4	+2	+3	+2
M406	+2.0	+ 6	+3	+1	+1	+1
M417	+6.2	+11	+3	+9	+7	+3
M422	-1.0	- 7	-5	+3	-5	-2
0-4323	-5.0	- 7	-3	0	-6	-4
056-2678	+1.4	0	+3	+6	+3	+1
057-2826	+3.1	+ 2	+3	+3	+4	+4
W1S-191	+2.1	+ 3	-1	+2	+2	+3
W1S-294	+0.1	0	+1	+2	-3	+2
Date planted	5-23	5-15	5-29	5-25	5-26	5-18
Merit matured	9-17	9-25	9-25	9-21	9-5	8-29
Days to mature	117	133	119	119	102	103
	Mean of 8 Tests	Lodging				
Grant	2.2	1.9	3.8	3.0	2.2	1.0
Merit	1.6	1.5	1.8	2.0	1.2	1.2
Norchief	1.8	1.6	2.5	3.0	1.0	1.0
M387	1.6	1.0	1.5	2.0	1.2	1.5
M389	1.8	1.5	1.3	2.0	2.0	1.0
M391	1.9	2.5	3.0	2.0	1.0	1.2
M406	2.1	2.3	3.5	3.0	1.5	1.2
M417	1.9	1.5	1.5	3.0	2.2	1.2
M422	1.3	1.0	1.5	2.0	1.0	1.0
0-4323	2.0	1.8	2.3	3.0	2.0	1.0
056-2678	2.0	2.3	3.5	2.0	1.2	1.0
057-2826	2.0	1.4	3.0	4.0	1.2	1.2
W1S-191	1.8	1.5	1.5	2.0	2.0	1.0
W1S-294	1.5	1.9	2.5	2.0	1.0	1.0

\* Not included in the mean.

<sup>1</sup>Missing dates due to frost before maturity.

<sup>2</sup>Irrigated.

Table 20. (Continued)

Strain	East Lansing Mich.	Spooner Wis. <sup>1,2</sup>	Morris Minn.	Fargo N.D. <sup>1</sup>	Eureka S.D.	Water- town S.D.	On- tario Ore. <sup>2</sup>
		*		*			*
Grant	+ 6		+ 2		+1	+6	+ 3
Merit	0		0		0	0	0
Norchief	+ 3		- 6		+1	+1	- 3
M387	- 1		- 3		+2	0	--
M389	+ 1		- 2		+2	+1	- 2
M391	+ 3		+ 2		+2	+1	+ 2
M406	+ 2		+ 1		+1	+2	+ 5
M417	+ 9		+ 7		+3	+4	+ 2
M422	+ 4		0		+4	-1	-12
O-4323	-10		-13		-2	0	- 8
056-2678	+ 4		- 3		-1	0	--
057-2826	+ 5		+ 3		+1	+3	+ 7
W1S-191	+ 8		0		+1	+1	+ 3
W1S-294	+ 2		- 4		0	+1	- 5
Date planted	5-28	5-26	5-28	5-14	5-21	5-20	5-9
Merit matured	9-21	--	9-26	--	9-18	9-20	9-15
Days to mature	116	--	121	--	120	123	129

	Lodging						
				*	*	*	*
Grant	2.0	1.5	2.5	1.0	1.0	1.0	3.5
Merit	2.0	1.5	1.8	1.0	1.0	1.0	3.2
Norchief	2.0	1.3	1.8	1.0	1.0	1.0	3.8
M387	2.0	1.0	2.6	1.0	1.0	1.0	--
M389	2.0	1.5	3.0	1.0	1.0	1.0	3.2
M391	2.0	1.3	2.3	1.0	1.0	1.0	2.5
M406	2.0	1.5	1.6	1.0	1.0	1.0	4.2
M417	2.0	1.0	2.6	1.0	1.0	1.0	2.7
M422	1.0	1.0	2.1	1.0	1.0	1.0	1.7
O-4323	2.0	2.2	1.8	1.0	1.0	1.0	3.2
056-2678	2.0	2.2	2.1	1.0	1.0	1.0	--
057-2826	2.0	2.0	1.5	1.0	1.0	1.0	3.8
W1S-191	2.0	1.5	2.6	1.0	1.0	1.0	3.5
W1S-294	1.0	1.3	1.6	1.0	1.0	1.0	3.2



Table 21. Plant height and seed quality for Uniform Test 0, 1964.

Strain	Mean of 11 Tests	Ottawa Ont.	Guelph Ont.	Ridge- town Ont.	Harrow Ont.	Colum- bus Ohio
Grant	29	30	36	31	26	33
Merit	30	34	38	33	23	33
Norchief	27	29	33	29	23	31
M387	29	30	36	32	24	32
M389	27	30	32	29	24	30
M391	32	36	38	35	27	37
M406	31	34	39	35	25	33
M417	30	34	35	32	28	32
M422	28	29	34	31	24	31
0-4323	34	37	40	40	30	37
056-2678	35	38	44	40	32	38
057-2826	32	33	38	37	26	36
W1S-191	30	33	35	32	26	32
W1S-294	31	36	39	34	26	33

	Mean of 11 Tests	Seed Quality				
Grant	2.0	2.0	2.0	2.0	1.5	1.0
Merit	2.0	1.0	2.0	3.0	2.0	1.0
Norchief	2.2	2.5	3.0	2.0	1.5	1.0
M387	2.4	2.5	3.0	3.0	2.0	2.5
M389	2.2	2.0	2.0	3.0	2.0	1.0
M391	2.3	2.5	2.0	2.0	2.8	1.5
M406	2.3	2.5	3.0	2.0	1.0	1.0
M417	2.3	2.5	3.0	2.0	1.5	1.0
M422	2.5	2.5	2.0	3.0	2.5	1.0
0-4323	2.6	2.5	3.0	2.0	2.5	1.5
056-2678	2.4	2.0	3.0	2.0	2.8	1.0
057-2826	2.3	2.0	2.0	2.0	2.0	1.0
W1S-191	2.3	2.0	5.0	2.0	1.0	1.0
W1S-294	2.3	2.5	2.0	2.0	2.0	1.0

\*Not included in the mean.

<sup>1</sup>Irrigated.

Table 21. (Continued)

Strain	East Lansing Mich.	Spooner Wis. <sup>1</sup>	Morris Minn.	Fargo N.D.	Eureka S.D.	Water- town S.D.	On- tario Ore. <sup>1</sup>
Grant	26	34	26	30	24	20	
Merit	25	38	30	33	26	22	
Norchief	23	34	25	28	23	20	
M387	26	35	28	32	25	22	
M389	24	33	26	30	24	20	
M391	29	37	32	34	25	23	
M406	25	35	31	32	27	22	
M417	25	34	29	32	25	23	
M422	26	34	27	28	24	21	
O-4323	31	40	33	35	27	26	
O56-2678	29	42	34	37	28	27	
O57-2826	26	38	30	35	27	24	
W1S-191	26	36	28	30	23	26	
W1S-294	24	39	29	33	24	24	

Seed Quality							*
Grant	2.0	1.0	2.5	2.0	3.0	3.0	2.0
Merit	2.0	2.5	2.5	1.5	2.0	3.0	1.5
Norchief	2.0	1.0	3.5	2.0	3.0	3.0	2.5
M387	2.0	1.5	3.8	1.5	3.0	2.0	--
M389	2.0	2.0	3.0	1.5	3.0	3.0	2.0
M391	2.0	2.3	3.5	1.5	3.0	2.0	2.5
M406	3.0	2.3	3.5	1.0	3.0	3.0	2.0
M417	3.0	1.8	2.5	1.5	3.0	3.0	2.0
M422	3.0	1.5	3.5	1.5	4.0	3.0	2.0
O-4323	3.0	2.2	3.5	2.0	3.0	3.0	2.0
O56-2678	3.0	2.2	3.5	1.5	2.0	3.0	--
O57-2826	3.0	1.8	3.8	1.5	3.0	3.0	2.0
W1S-191	2.0	1.3	3.5	2.0	3.0	3.0	2.5
W1S-294	3.0	1.3	4.0	1.5	3.0	3.0	2.0

Table 22. Percentages of protein and oil for Uniform Test 0, 1964.

Strain	Mean of 7 Tests	Ottawa Ont.	Guelph Ont.	Colum- bus Ohio	East Lansing Mich.	Spooner Wis. <sup>1</sup>	Morris Minn.	Fargo N.D.	On- tario Ore. <sup>1</sup> *
Grant	40.4	40.5	41.4	39.4	42.0	40.8	41.0	37.7	34.5
Merit	39.2	37.9	39.4	38.7	41.1	39.4	41.4	36.4	33.5
Norchief	40.4	40.6	41.3	39.6	41.5	39.0	42.9	37.7	35.7
M387	38.5	38.3	39.5	37.8	39.6	38.2	39.5	36.7	--
M389	40.3	39.8	40.0	40.2	42.5	39.3	42.0	38.1	35.6
M391	39.7	40.6	40.0	38.7	41.1	39.0	42.5	36.2	35.3
M406	39.9	39.3	41.1	40.1	40.2	40.0	42.0	36.9	36.7
M417	40.6	40.5	42.0	40.5	41.8	40.4	41.3	37.5	36.9
M422	40.4	40.6	40.4	38.9	42.4	40.8	42.2	37.6	35.4
0-4323	40.8	41.1	41.8	41.1	41.5	40.5	42.3	37.1	36.7
056-2678	40.9	40.2	41.6	40.7	42.3	40.6	42.9	38.1	--
057-2826	39.8	38.7	39.4	39.4	41.7	40.2	42.7	36.8	35.4
WLS-191	41.3	41.4	40.9	40.5	43.0	41.1	43.9	38.3	36.2
WLS-294	40.1	40.3	41.4	39.6	40.5	39.4	42.3	36.9	35.6

	Mean of 7 Tests	Percentage of Oil							*
Grant	19.3	19.5	17.6	21.1	20.1	17.7	18.4	20.9	21.3
Merit	20.3	20.6	18.4	22.3	20.2	19.6	19.0	21.7	20.4
Norchief	19.6	19.4	17.7	21.4	20.4	19.3	18.2	21.0	21.6
M387	20.2	19.9	17.7	23.3	20.0	19.2	19.2	22.1	--
M389	20.0	20.0	18.2	22.4	19.8	19.8	18.7	21.0	22.1
M391	20.4	19.2	18.5	22.3	21.1	19.8	19.1	22.6	23.0
M406	19.5	20.8	16.5	21.8	20.6	18.2	17.3	21.2	20.3
M417	19.8	19.7	18.3	21.5	20.3	19.4	17.9	21.4	22.1
M422	19.9	19.4	18.1	22.9	20.1	19.4	18.5	21.2	23.1
0-4323	19.7	19.2	18.5	21.9	20.1	19.4	17.9	20.8	21.4
056-2678	19.5	20.1	17.9	21.3	19.6	18.8	18.0	20.5	--
057-2826	19.5	19.1	17.9	21.7	20.6	18.6	17.8	20.7	20.8
WLS-191	19.7	19.5	18.4	21.9	20.2	19.3	17.5	21.3	21.9
WLS-294	19.6	18.9	17.5	21.4	20.1	19.2	18.3	21.5	21.4

\*Not included in the mean.

<sup>1</sup>Irrigated.



Table 23. Three-year summary of data for Uniform Test 0, 1962-1964.

Strain	Yield	Rank	Matu- rity <sup>1</sup>	Lodg- ing	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	31	31	24	24	31	27	23	18	18
Grant	30.4	1	+3.4	2.7	31	1.9	16.0	39.8	19.6
Merit	28.0	5	0	2.2	32	1.9	14.6	39.1	20.4
Norchief	26.7	6	-1.0	2.2	29	2.3	16.2	40.2	19.8
0-4323	28.4	4	-3.0	2.3	35	2.5	14.8	40.8	19.7
056-2678	28.6	3	+1.6	2.4	37	2.3	14.4	40.5	19.5
057-2826	30.0	2	+3.1	2.5	35	2.3	15.8	39.8	19.8

<sup>1</sup>Days earlier (-) or later (+) than Merit which matured September 20, 118 days after planting.

Table 24. Three-year summary of yield and yield rank for Uniform Test 0, 1962-1964.

Strain	Mean of 31 Tests	Ottawa Ont.	Guelph Ont.	Ridge- town Ont.	Colum- bus Ohio	East Lansing Mich.	Spooner Wis.
Years Tested		1962- 1964	1962- 1964	1962- 1964	1962- 1964	1962- 1964	1962- 1964
Grant	30.4	36.7	25.2	45.7	26.1	37.6	32.6
Merit	28.0	34.2	25.1	41.3	21.4	31.3	32.1
Norchief	26.7	34.9	23.7	39.0	19.1	27.1	30.3
0-4323	28.4	37.6	27.5	41.8	25.1	34.5	32.7
056-2678	28.6	36.1	25.1	44.2	26.6	31.6	30.8
057-2826	30.0	36.2	25.7	45.6	31.3	33.6	31.4

Yield Rank							
Grant	1	2	3	1	3	1	2
Merit	5	6	4	5	5	5	3
Norchief	6	5	6	6	6	6	6
0-4323	4	1	1	4	4	2	1
056-2678	3	4	4	3	2	4	5
057-2826	2	3	2	2	1	3	4

Table 24. (Continued)

Strain	Durand Wis.	Crooks- ton Minn.	Morris Minn.	Fargo N.D.	Eureka S.D.	Water- town S.D.	On- tario Ore.
Years Tested	1962- 1963	1962- 1963	1962- 1964	1963- 1964	1962, 1964	1962- 1964	1962- 1964
Grant	18.3	23.9	25.9	30.3	13.1	19.4	51.9
Merit	16.7	23.1	25.5	29.3	15.7	17.4	58.4
Norchief	17.1	21.1	26.0	26.7	15.8	18.9	48.0
0-4323	15.2	20.9	22.3	24.9	11.2	15.8	52.3
056-2678	17.2	19.2	25.6	25.4	13.9	20.4	--
057-2826	17.9	20.4	28.2	29.3	14.2	18.4	50.6

Yield Rank							
Grant	1	1	3	1	5	2	3
Merit	5	2	5	2	2	5	1
Norchief	4	3	2	4	1	3	5
0-4323	6	4	6	6	6	6	2
056-2678	3	6	4	5	4	1	-
057-2826	2	5	1	2	3	4	4

UNIFORM PRELIMINARY TEST 0 - 1964

Strain	Originating Agency	Origin	Generation Compositied
Grant	Wis. A.E.S. & U.S.R.S.L.	Lincoln x Seneca	F <sub>6</sub>
Merit	Central Exp. Farm, Ottawa, Ontario	Blackhawk x Capital	F <sub>8</sub>
M393	Minn. A.E.S. & U.S.R.S.L.	Capital x Renville	F <sub>5</sub>
M421	Minn. A.E.S. & U.S.R.S.L.	Capital x Renville	F <sub>5</sub>
M423	Minn. A.E.S. & U.S.R.S.L.	Capital x M10	F <sub>5</sub>
M427	Minn. A.E.S. & U.S.R.S.L.	Grant x Acme	F <sub>5</sub>
M428	Minn. A.E.S. & U.S.R.S.L.	Pagoda 25 x Chippewa	F <sub>5</sub>
M443	Minn. A.E.S. & U.S.R.S.L.	Acme x Chippewa	F <sub>5</sub>
O-4456	Research Station, Harrow, Ontario	Hardome x Adams	F <sub>5</sub>

Identification of Parent Strain

M10 Sel. from Lincoln (2) x Richland, in Uniform Test I in 1949-51.

The checks, Grant and Merit, had higher mean yield than any of the seven experimental strains. Some strains had improved lodging resistance, but were rather short. M427 had notable seed composition, being high in protein and average in oil content, but its yield was well below that of Grant.

Table 25. Descriptive data for the strains in Uniform Preliminary Test 0, 1964.

Strain	Flower Color	Pubes- cence Color	Pod Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Shattering*	
							1101	M10
Grant	W	Lt	Br	S	Y	Bl	3.0	3.5
Merit	W	G	Br	D	Y	Bf	1.0	1.0
M393	P	G	Br	S	Y	Y	1.0	4.5
M421	W	G	Br	S	Y	Y	1.5	5.0
M423	P	G	Br	D	Y	Y	1.0	3.0
M427	P	G	Br	S	Y	Y	3.0	5.0
M428	P	T	Br	S	Y	Y	2.0	5.0
M443	P	T	Br	S	Y	Br	4.0	5.0
O-4456	P	G	Br	S	Y	G	2.5	3.0

\*Average of 2 replications at Urbana, Illinois, in Field 1101 planted May 6 and in Field M10 planted June 3. Notes taken 1 month after maturity in 1101 and about 2 months after maturity on November 20 in M10.

Table 26. Summary of data for Uniform Preliminary Test 0, 1964.

Strain	Yield	Rank	Matu- rity <sup>1</sup>	Lodg- ing	Height	Seed Quality	Seed Weight	Seed Composition	
No. of Tests	8	8	6	5	8	8	5	Protein	Oil
								5	5
Grant	27.4	1	+3.3	2.2	28	2.4	15.7	40.7	18.8
Merit	26.1	2	0	1.5	29	2.1	13.4	39.8	20.0
M393	24.9	4	-1.0	1.3	24	2.4	15.1	39.9	20.9
M421	24.6	5	-0.5	1.4	23	2.8	13.1	38.6	21.0
M423	25.5	3	+1.7	2.2	28	2.5	15.5	39.4	20.3
M427	24.2	6	+2.8	1.4	25	2.3	16.1	42.2	19.2
M428	23.5	8	-3.8	2.0	26	2.4	15.8	39.9	20.4
M443	23.0	9	-2.7	1.2	24	2.4	15.7	38.9	19.7
0-4456	24.1	7	0	2.0	32	2.7	15.7	40.1	19.6

<sup>1</sup>Days earlier (-) or later (+) than Merit which matured September 19, 121 days after planting.

Table 27. Disease data for Uniform Preliminary Test 0, 1964.

Strain	Bacterial Blight	Brown Stem Rot	Phytophthora Rot	Frogeye Ind.
	<u>Ill.</u> <u>a</u> <sup>1</sup>	<u>Ill.</u> <u>n</u> <sup>1</sup>	<u>Ind.</u> <u>a</u>	<u>Race 2</u> <u>a</u>
Grant	3	2	S	5
Merit	3	2	R	5
M393	4	1	S	5
M421	3	2	S	5
M423	2	3	S	4
M427	3	3	S	5
M428	4	1	S	3
M443	3	1	S	3
0-4456	3	1	S	5

<sup>1</sup>a = artificial inoculation; n = natural infection.



Table 28. Yield and yield rank for Uniform Preliminary Test 0, 1964.

Strain	Mean of 8 Tests	Ottawa Ont.	Ridge- town Ont.	East Lan- sing Mich.	Spoon- er Wis. <sup>1</sup>	St. Paul Minn.	Fargo N.D.	Eureka S.D.	Water- town S.D.	On- tario Ore. <sup>1</sup> *
Grant	27.4	40.2	50.7	38.1	30.7	16.8	20.6	10.8	11.1	45.9
Merit	26.1	35.0	47.6	30.7	32.6	18.1	21.2	12.0	11.5	49.8
M393	24.9	34.8	45.3	32.8	28.4	17.4	18.6	11.6	10.5	42.6
M421	24.6	32.6	42.0	28.3	34.5	15.4	20.2	9.9	14.0	49.2
M423	25.5	40.1	42.2	30.7	30.9	16.4	20.0	12.8	10.8	50.8
M427	24.2	35.4	44.7	29.9	28.5	14.5	18.1	9.8	12.9	47.6
M428	23.5	36.9	44.0	27.3	27.9	14.5	19.0	9.5	9.2	48.8
M443	23.0	35.6	37.5	23.9	33.5	17.2	17.1	7.7	11.6	51.6
0-4456	24.1	35.7	45.2	31.9	28.1	16.6	16.6	10.1	8.8	52.2
Coef. of Var. (%)		4.6	5.4	6.6	7.9	--	5.8	13.5	11.1	10.7
L.S.D. (5%)		2.7	5.5	4.6	N.S.	--	2.5	3.2	2.9	N.S.
Row Spacing (In.)		38	24	24	36	36	40	42	42	20

	Yield Rank									
Grant	1	1	1	1	5	4	2	4	5	8
Merit	2	7	2	4	3	1	1	2	4	4
M393	4	8	3	2	7	2	6	3	7	9
M421	5	9	8	7	1	7	3	6	1	5
M423	3	2	7	4	4	6	4	1	6	3
M427	6	6	5	6	6	8	7	7	2	7
M428	8	3	6	8	9	8	5	8	8	6
M443	9	5	9	9	2	3	8	9	3	2
0-4456	7	4	4	3	8	5	9	5	9	1

\*Not included in the mean.

<sup>1</sup>Irrigated.

Table 29. Maturity, days earlier (-) or later (+) than Merit, for Uniform Preliminary Test 0, 1964.

Strain	Mean of 6 Tests	Ottawa Ont.	Ridge- town Ont.	East Lansing Mich.	St. Paul Minn.	Fargo N.D.	Eureka S.D.	Water- town S.D.	On- tario Ore. <sup>1</sup>
						*			*
Grant	+3.3	+11	0	+ 2	+4		+2	+1	+ 3
Merit	0	0	0	0	0		0	0	0
M393	-1.0	- 7	+2	0	-5		+4	0	-12
M421	-0.5	- 8	+8	- 4	-3		+3	+1	-11
M423	+1.7	+ 1	+7	0	-2		+1	+3	- 2
M427	+2.8	+ 5	+4	0	+8		-1	+1	+ 1
M428	-3.8	- 7	-2	-10	-5		+1	0	- 7
M443	-2.7	- 8	+1	- 4	-4		-1	0	-10
0-4456	0	+ 5	+7	- 8	-2		-2	0	+ 2
Date planted	5-21	5-15	5-25	5-28	5-14	5-14	5-21	5-20	5-9
Merit matured	9-19	9-23	9-21	9-26	9-5	--	9-18	9-20	9-15
Days to mature	121	131	119	121	114	--	120	123	129

\*Not included in the mean.

<sup>1</sup>Irrigated.

UNIFORM TEST I - 1964

Strain	Originating Agency	Origin	Generation Composited
A-100	Freedolph and Hubert Anderson, St. Peter, Minn.	Unknown	
Chippewa	Ill. A.E.S. & U.S.R.S.L.	Lincoln (2) x Richland	F <sub>5</sub>
Chippewa 64	Ill. A.E.S. & U.S.R.S.L.	Chippewa (8) x Blackhawk	29 F <sub>3</sub> lines
A1-540	Iowa A.E.S. & U.S.R.S.L.	Hawkeye x Harosoy	F <sub>9</sub>
A9-619	Iowa A.E.S. & U.S.R.S.L.	Clark x Chippewa	F <sub>4</sub>
A9K-2558	Iowa A.E.S. & U.S.R.S.L.	Hawkeye x Chippewa	F <sub>4</sub>
C1255	Purdue A.E.S. & U.S.R.S.L.	Harosoy x Clark	F <sub>6</sub>
C1296	Purdue A.E.S. & U.S.R.S.L.	Mukden x Mandarin (Ottawa)	F <sub>6</sub>
C1299	Purdue A.E.S. & U.S.R.S.L.	Mukden x Mandarin (Ottawa)	F <sub>6</sub>
C1301	Purdue A.E.S. & U.S.R.S.L.	Mukden x Mandarin (Ottawa)	F <sub>6</sub>

The three-year summary in Table 37 shows no difference in the mean performance of Chippewa and Chippewa 64. C1255 had a 1 bushel yield advantage over A-100 and averaged two days earlier. However, it was somewhat deficient in lodging and seed quality and has a tendency to gray seed coat under some environments.

The three A strains in this test appear to have a yield advantage over A-100. A1-540 had the best seed quality but the poorest shattering resistance.

The three C selections from Mukden x Mandarin (Ottawa) yielded poorly in 1964 and were quite tall and lodging susceptible.

A-100

A-100 is a farmer selection developed by Freedolph and Hubert Anderson, St. Peter, Minnesota. It is Group I maturity and has white flower color, gray pubescence, brown pods, and shiny yellow seed with buff hilum. It is similar to Blackhawk in maturity and appearance but stands better and has larger seeds.

A history of its development is given below:

- 1954 A single plant selected from an unknown variety.
- 1955-60 Increased to 400 bushels in the fall of 1958 and sold to neighboring farmers in 1959.
- 1961 Tested by the University of Minnesota.
- 1962 Tested in Uniform Tests I and II. A considerable commercial acreage was grown in the St. Peter area. The Minnesota Crop Improvement Association received a request from the Peterson Seed Company of Waterloo, Iowa, for certification of A-100, and the Minnesota Experiment Station proposed to make A-100 eligible for certification if arrangements were made for providing and maintaining a pure source of breeder and foundation seed.

1963 Tested in Uniform Test I. About 2,000 acres grown commercially in Minnesota. Also marketed in Iowa since 1961 or 1962 by the Peterson Seed Company, which sold 12,000 bushels for seed in Iowa in 1963.

A "Memorandum of Understanding" was drawn up between the University of Minnesota and the Anderson Brothers for the increase and maintenance of breeder and foundation seed of A-100. The University, in cooperation with the Anderson Brothers, increased 21 pounds of purified seed from the Experiment Station breeding program and about 25 pounds of pure seed provided by the Anderson's, and produced 75 bushels of foundation seed.

1964 Tested in Uniform Test II. Cooperating states were informed by Minnesota of the purification of A-100, and given an opportunity to participate in the 1964 increase of foundation seed. Minnesota, Illinois, and Iowa participated in the increase as indicated below:

	Allotment of 1963 Seed (bushels)	Foundation Seed (acres)	Production (bushels)
Minnesota	65	98	2,800
Iowa	5	5	130
Illinois	<u>5</u>	<u>10</u>	<u>282</u>
Total	75	113	3,212

Table 30. Regional testing history and descriptive data for the strains in Uniform Test I, 1964.

Strain	Years in Uniform Test I	Previous Regional Test	Flower Color	Pubes- cence Color	Pod Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Shatter- ing*
A-100	3	None	W	G	Br	S	Y	Bf	2.0
Chippewa	16	P.T. I	P	T	Br	S	Y	Bl	1.0
Chippewa 64	3	None	P	T	Br	S	Y	Bl	1.0
A1-540	1	P.T. I	P	G	Br	D	Y	Y	4.0
A9-619	2	P.T. I	P	T	Br	S	Y	Bl	1.5
A9K-2558	1	P.T. I	P	T	Br	S	Y	Bl	2.0
C1255	3	P.T. I	P	T	Br	D	Lg	G	2.0
C1296	1	P.T. I	W	G	Br	S	Y	Y	2.5
C1299	1	P.T. I	W	G	Br	S	Y	Bf	3.0
C1301	1	P.T. I	W	G	Br	S	Y	Y	3.5

\*Average of 2 replications at Urbana, Illinois, planted May 6.

Table 31. Summary of data for Uniform Test I, 1964.

Strain	Yield	Rank	Matu- rity <sup>1</sup>	Lodg- ing	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	18	18	15	14	17	14	15	9	9
A-100	35.3	5	+8.9	1.8	34	1.9	18.4	39.9	21.3
Chippewa	34.9	6	0	1.8	33	2.2	14.4	40.4	20.6
Chippewa 64	34.1	7	+0.5	1.6	34	2.2	15.6	40.4	20.2
A1-540	36.9	1	+6.3	1.5	36	1.8	16.4	41.8	20.2
A9-619	36.9	1	+5.3	1.8	34	2.2	16.8	40.7	20.9
A9K-2558	36.2	3	+4.3	1.7	34	2.4	17.4	41.4	20.0
C1255	36.1	4	+5.5	2.1	36	2.1	17.8	40.8	20.6
C1296	30.4	10	+8.7	2.7	40	1.9	16.6	42.0	19.5
C1299	31.9	8	+9.0	3.0	40	2.2	16.8	43.5	19.2
C1301	30.9	9	+4.0	2.5	38	1.8	15.4	42.4	19.2

<sup>1</sup>Days earlier (-) or later (+) than Chippewa which matured September 12, 112 days after planting.

Table 32. Disease data for Uniform Test I, 1964.

Strain	Bacterial	Bacterial	Phytophthora	Frogeye		Downy	Chocolate
	Blight	Pustule	Rot	Ind.		Mildew	Spot <sup>2</sup>
	<u>Ill.</u> a <sup>1</sup>	<u>Ia.</u> a	<u>Ind.</u> a	<u>Race 1</u> a	<u>Race 2</u> a	<u>Ind.</u> n <sup>1</sup>	<u>Ia.</u> a
A-100	2	5	S	R	5	4	5
Chippewa	1	5	S	S	5	4	3
Chippewa 64	2	5	R	S	5	4	5
A1-540	2	3	S	S	5	3	4
A9-619	2	4	S	Seg.	5	4	4
A9K-2558	2	4	S	Seg.	4	3	5
C1255	3	4	S	R	4	3	4
C1296	3	4	R	S	5	3	4
C1299	3	4	R	S	5	1	4
C1301	2	4	R	S	4	1	5

<sup>1</sup>a = artificial inoculation; n = natural infection.

<sup>2</sup>A bacterial disease producing symptoms similar to those of brown spot. The organism is unnamed.

Table 33. Yield and yield rank for Uniform Test I, 1964.

Strain	East									
	Mean of 18 Tests	Ridge- town Ont.	Harrow Ont.	Hoyt- ville Ohio	Woos- ter Ohio	Colum- bus Ohio	Lan- sing Mich.	Dun- dee Mich.	Walk- erton Ind.	Lafa- yette Ind.
A-100	35.3	50.9	44.9	30.0	32.2	40.0	41.2	37.8	40.6	38.0
Chippewa	34.9	49.3	40.3	26.2	33.7	36.7	38.6	36.3	38.1	42.0
Chippewa 64	34.1	49.1	43.4	25.4	30.5	37.5	36.2	32.3	37.7	39.3
A1-540	36.9	51.8	38.5	26.2	32.6	36.3	39.1	40.0	43.6	49.5
A9-619	36.9	52.4	45.8	28.5	32.8	43.5	38.3	34.4	40.5	43.1
A9K-2558	36.2	51.0	46.2	25.9	33.1	38.3	34.7	34.0	42.4	45.3
C1255	36.1	50.2	46.2	30.0	32.2	36.3	40.9	37.2	42.7	36.7
C1296	30.4	39.7	39.0	24.2	29.9	27.8	31.9	31.7	38.5	40.6
C1299	31.9	42.5	37.1	29.5	34.5	30.7	32.3	35.2	42.8	33.7
C1301	30.9	48.4	36.0	25.1	29.3	30.1	30.9	35.8	35.5	29.8
Coef. of Var. (%)		5.4	9.0	10.1	7.3	14.6	6.0	5.3	10.7	6.7
L.S.D. (5%)		3.8	5.4	3.9	N.S.	14.8	3.1	2.7	N.S.	3.9
Row Spacing (In.)		24	40	28	32	28	24	28	40	38

Yield Rank										
A-100	5	4	4	1	6	2	1	2	5	7
Chippewa	6	6	6	5	2	5	4	4	8	4
Chippewa 64	7	7	5	8	8	4	6	9	9	6
A1-540	1	2	8	5	5	6	3	1	1	1
A9-619	1	1	3	4	4	1	5	7	6	3
A9K-2558	3	3	1	7	3	3	7	8	4	2
C1255	4	5	1	1	6	6	2	3	3	8
C1296	10	10	7	10	9	10	9	10	7	5
C1299	8	9	9	3	1	8	8	6	2	9
C1301	9	8	10	9	10	9	10	5	10	10

\*Not included in the mean.

Table 33. (Continued)

Strain	Madi- son Wis.	Shab- bona Ill.	Dwight Ill.	St. Paul Minn.	Lam- ber- ton Minn.	Wa- seca Minn.	Cresco Iowa	Kana- wha Iowa	Eu- reka S.D.	Water- town S.D.	Brook- ings S.D.
									*	*	
A-100	27.9	46.6	43.3	21.7	23.6	33.8	20.8	37.5	9.3	11.1	24.2
Chippewa	27.7	44.0	43.4	20.8	26.0	35.4	23.1	37.0	11.6	14.2	29.0
Chippewa 64	24.3	45.0	41.1	24.3	24.0	34.7	22.4	39.0	11.9	13.6	28.1
A1-540	20.7	53.1	41.4	23.1	30.4	36.5	27.5	44.1	10.3	15.3	30.1
A9-619	28.6	50.3	41.8	23.1	26.2	37.0	25.3	40.6	9.5	13.2	31.6
A9K-2558	28.0	48.6	43.7	24.0	27.3	35.6	22.6	41.8	10.9	14.1	28.4
C1255	29.0	47.5	40.3	20.4	27.0	37.2	23.0	42.2	10.5	13.7	31.1
C1296	23.7	38.3	32.9	18.1	22.6	32.1	20.1	32.3	5.3	8.3	24.2
C1299	22.4	44.5	34.2	20.9	22.6	30.0	22.4	35.0	5.3	8.8	23.3
C1301	21.5	42.1	36.1	18.7	23.2	29.7	20.2	38.2	6.4	7.7	26.3
C. V. (%)	9.0	5.3	7.8	--	--	--	11.3	5.8	14.2	10.8	8.7
L.S.D. (5%)	3.3	3.6	4.5	--	--	--	3.6	3.2	2.9	2.9	3.5
Row Sp. (In.)	36	40	38	36	40	40	42	40	42	42	42

	Yield Rank										
A-100	4	5	3	5	7	7	8	7	7	7	8
Chippewa	5	8	2	7	5	5	3	8	2	2	4
Chippewa 64	6	6	6	1	6	6	6	5	1	5	6
A1-540	10	1	5	3	1	3	1	1	5	1	3
A9-619	2	2	4	3	4	2	2	4	6	6	1
A9K-2558	3	3	1	2	2	4	5	3	3	3	5
C1255	1	4	7	8	3	1	4	2	4	4	2
C1296	7	10	10	10	9	8	10	10	9	9	8
C1299	8	7	9	6	9	9	6	9	9	8	10
C1301	9	9	8	9	8	10	9	6	8	10	7



Table 34. Maturity, days earlier (-) or later (+) than Chippewa, and lodging for Uniform Test I, 1964.

Strain	Mean of 15 Tests	Ridge- town Ont.	Harrow Ont.	Hoyt- ville Ohio	Woos- ter Ohio	Colum- bus Ohio	East	Dundee <sup>1</sup> Mich. <sup>1</sup>	Walk- erton Ind.	Lafa- yette Ind.
							Lan- sing Mich. <sup>1</sup>			
							*	*		
A-100	+8.9	+11	+7	+23	+11	+2		--	+13	+5
Chippewa	0	0	0	0	0	0		0	0	0
Chippewa 64	+0.5	+ 1	+1	0	+ 3	0		+2	+ 1	-1
A1-540	+6.3	+13	+6	+ 7	+ 5	+1		--	+10	+3
A9-619	+5.3	+ 8	+3	+ 6	+ 9	+2		+4	+ 9	+4
A9K-2558	+4.3	+ 6	+1	+ 6	+ 6	0		+3	+ 6	+3
C1255	+5.5	+12	+3	+ 6	+ 8	0		--	+12	+3
C1296	+8.7	+12	+6	+14	+ 6	+1		--	+14	+6
C1299	+9.0	+14	+5	+19	+ 8	+4		--	+13	+6
C1301	+4.0	+13	+1	+10	+ 2	+1		+4	+ 3	+2
Date planted	5-23	5-25	5-26	5-22	5-21	5-18	5-28	5-25	5-22	5-19
Chippewa matured	9-12	9-23	9-13	9-5	9-3	9-8	--	9-24	9-5	9-5
Days to mature	112	121	110	106	105	113	--	122	106	109

	Mean of 14 Tests	Lodging								
		*								
A-100	1.8	2.0	2.8	1.0	1.0	1.2	2.0	1.0	2.0	1.8
Chippewa	1.8	2.0	2.5	1.0	1.0	1.0	2.0	1.0	2.5	2.0
Chippewa 64	1.6	2.0	2.8	1.0	1.0	1.0	2.0	1.0	1.8	2.0
A1-540	1.5	2.0	1.8	1.0	1.0	1.0	1.0	1.0	1.0	1.0
A9-619	1.8	2.0	2.8	1.5	1.0	1.0	1.0	2.0	1.8	1.0
A9K-2558	1.7	2.0	2.5	1.0	1.0	1.0	1.0	2.0	1.3	1.3
C1255	2.1	3.0	2.8	2.2	1.0	1.0	2.0	2.0	2.0	2.0
C1296	2.7	3.0	3.2	2.2	1.0	1.5	2.0	3.0	2.8	2.3
C1299	3.0	3.0	4.0	2.2	1.0	1.5	3.0	4.0	2.5	3.0
C1301	2.5	3.0	3.8	2.2	1.0	1.0	2.0	3.0	2.8	2.3

\*Not included in the mean.

<sup>1</sup>Missing dates due to frost before maturity.

Table 34. (Continued)

Strain	Madi- son Wis.	Shab- bona Ill.	Dwight Ill.	St. Paul Minn.	Lam- ber- ton Minn.	Wa- seca Minn.	Cresco Iowa	Kana- wha Iowa	Eu- reka S.D.	Water- town S.D.	Brook- ings S.D.
				*					*	*	
A-100	+9	+ 7	+ 7	--	+8	+11	+5	+ 7	+2	+5	+ 8
Chippewa	0	0	0	0	0	0	0	0	0	0	0
Chippewa 64	0	0	+ 1	+2	0	0	0	+ 1	-1	0	0
Al-540	+6	+ 6	+ 5	--	+6	+ 8	+4	+ 7	+5	+5	+ 8
A9-619	+5	+ 6	+ 5	+7	+6	+ 5	+2	+ 4	+1	+3	+ 6
A9K-2558	+2	+ 4	+ 4	+5	+6	+ 5	+3	+ 6	+3	+3	+ 7
C1255	+4	+ 5	+ 7	--	+5	+ 4	+4	+ 3	+5	+6	+ 7
C1296	+2	+14	+10	--	+7	+12	+9	+10	+7	+6	+ 8
C1299	+4	+12	+ 8	--	+7	+12	+7	+ 6	+6	+6	+10
C1301	-1	+ 5	+ 4	--	+7	+ 4	+2	+ 1	0	0	+ 6
Date pltd.	5-19	5-18	6-16	5-14	5-18	5-21	5-22	5-18	5-21	5-20	5-29
Chippewa mat.	9-8	9-10	9-21	9-22	9-10	9-18	9-12	9-8	9-22	9-24	9-29
Da. to mat.	112	115	97	131	115	120	113	113	124	127	123

	Lodging										
	*			*				*	*	*	
A-100	1.0	2.0	1.9	--	2.8	2.2	1.4	1.5	1.0	1.0	1.0
Chippewa	1.0	2.3	1.7	2.2	1.8	2.0	1.4	1.4	1.0	1.0	1.0
Chippewa 64	1.0	2.0	1.7	2.8	1.0	2.0	1.3	1.3	1.0	1.0	1.0
Al-540	1.0	2.1	1.2	--	2.0	2.8	1.6	1.5	1.0	1.0	1.0
A9-619	1.0	2.1	1.8	2.5	2.2	2.0	1.7	1.6	1.0	1.0	1.0
A9K-2558	1.0	2.0	2.1	2.5	1.8	2.8	1.6	1.6	1.0	1.0	1.0
C1255	1.0	2.3	2.3	--	2.0	2.8	1.8	1.8	1.0	1.0	1.0
C1296	1.0	3.4	3.4	--	3.2	3.0	2.2	2.2	1.0	1.0	1.0
C1299	1.0	3.1	3.5	--	3.8	3.0	2.6	2.4	1.0	1.0	1.0
C1301	1.0	2.5	2.9	--	3.2	2.5	1.9	1.8	1.0	1.0	1.0

Table 35. Plant height and seed quality for Uniform Test I, 1964.

Strain	Mean of 17 Tests	Ridge- town Ont.	Harrow Ont.	Hoyt- ville Ohio	Woos- ter Ohio	Colum- bus Ohio	East			
							Lan- sing Mich.	Dun- dee Mich.	Walk- erton Ind.	Lafa- yette Ind.
A-100	34	40	34	29	27	35	26	31	35	35
Chippewa	33	37	32	26	26	35	26	32	35	38
Chippewa 64	34	39	34	27	27	36	26	32	38	39
A1-540	36	43	36	28	27	37	26	33	40	42
A9-619	34	40	33	28	26	36	24	33	37	39
A9K-2558	34	39	34	26	26	36	24	32	39	40
C1255	36	43	36	31	27	36	27	34	38	37
C1296	40	48	40	31	29	39	31	38	43	45
C1299	40	50	40	34	28	39	27	37	44	40
C1301	38	46	38	32	27	39	29	36	40	35

	Mean of 14 Tests	Seed Quality								
		*								
A-100	1.9	2.0	1.0	1.5	1.0	1.0	2.0	2.0	1.5	1.5
Chippewa	2.2	2.0	1.8	2.0	1.0	1.0	3.0	2.0	1.5	1.5
Chippewa 64	2.2	2.0	1.5	2.0	1.5	1.0	3.0	2.0	1.5	1.5
A1-540	1.8	2.0	1.2	1.0	1.0	1.0	2.0	2.0	1.0	1.0
A9-619	2.2	2.0	1.8	2.0	1.0	1.0	3.0	2.0	1.5	2.0
A9K-2558	2.4	2.0	1.0	2.7	1.2	1.0	3.0	3.0	2.0	1.5
C1255	2.1	3.0	1.0	2.0	1.0	1.0	2.0	2.0	1.0	1.5
C1296	1.9	2.0	1.0	1.5	1.0	1.0	3.0	1.0	1.0	1.0
C1299	2.2	3.0	1.0	2.0	1.0	1.0	2.0	2.0	1.0	1.5
C1301	1.8	2.0	1.0	1.7	1.0	1.0	2.0	1.0	1.0	1.0

\*Not included in the mean.

Table 35. (Continued)

Strain	Madi- son Wis.	Shab- bona Ill.	Dwight Ill.	St. Paul Minn.	Lam- ber- ton Minn.	Wa- seca Minn.	Cresco Iowa	Kana- wha Iowa	Eu- reka S.D.	Water- town S.D.	Brook- ings S.D.
				*					*	*	
A-100	25	39	34	--	37	34	32	40	24	22	38
Chippewa	23	38	35	31	35	34	33	39	24	21	35
Chippewa 64	22	39	37	32	35	35	33	41	25	24	38
A1-540	22	43	36	--	42	35	36	47	25	24	40
A9-619	22	40	35	30	33	35	34	41	23	22	36
A9K-2558	22	40	35	31	37	35	34	42	26	23	36
C1255	25	43	37	--	38	36	35	43	28	25	39
C1296	25	52	43	--	42	40	40	52	29	27	39
C1299	25	50	43	--	40	41	41	51	30	29	44
C1301	24	49	42	--	38	37	40	49	27	28	40

Seed Quality											
	*						*		*	*	
A-100	1.0	1.3	1.4	4.0	3.5	3.2	1.0	1.0	4.0	2.0	1.0
Chippewa	1.0	1.4	1.4	4.0	3.5	3.2	1.0	1.0	4.0	1.0	2.0
Chippewa 64	1.0	1.5	1.6	4.0	3.5	3.2	1.0	1.0	4.0	2.0	2.0
A1-540	1.0	1.0	1.5	3.8	3.3	3.5	1.0	1.0	4.0	3.0	1.0
A9-619	1.0	1.5	1.5	3.8	3.7	3.5	1.0	1.0	5.0	2.0	2.0
A9K-2558	1.0	1.8	1.5	4.0	3.8	3.5	1.0	1.0	5.0	2.0	2.0
C1255	1.0	1.1	1.4	4.2	3.2	3.8	1.0	1.0	4.0	2.0	2.0
C1296	1.0	1.3	1.5	3.8	3.5	3.2	1.0	1.0	5.0	3.0	2.0
C1299	1.0	1.4	1.4	4.2	3.8	3.5	1.0	1.0	5.0	3.0	3.0
C1301	1.0	1.5	1.3	4.2	3.5	3.2	1.0	1.0	4.0	3.0	1.0

Table 36. Percentages of protein and oil for Uniform Test I, 1964.

Strain	Mean of 9 Tests	Ridge- town Ont.	Colum- bus Ohio	Dun- dee Mich.	Walk- erton Ind.	Madi- son Wis.	Shab- bona Ill.	Wa- seca Minn.	Kana- wha Iowa	Brook- ings S.D.
A-100	39.9	41.7	37.9	42.9	39.2	39.3	39.2	39.4	39.7	39.4
Chippewa	40.4	42.9	39.1	44.1	39.2	39.1	40.4	39.1	40.1	39.7
Chippewa 64	40.4	42.6	39.4	43.6	40.0	39.5	40.1	39.0	39.8	39.9
A1-540	41.8	45.5	39.7	45.1	40.8	41.8	40.6	40.5	41.3	40.6
A9-619	40.7	42.2	39.5	44.7	39.6	40.1	39.9	39.5	40.5	40.1
A9K-2558	41.4	43.6	40.8	44.9	40.7	40.1	40.2	40.0	41.1	41.4
C1255	40.8	44.0	39.4	44.7	40.4	39.7	40.1	39.0	40.0	40.0
C1296	42.0	44.8	40.3	46.3	40.7	40.2	42.2	40.6	42.1	40.7
C1299	43.5	47.2	42.1	48.0	42.1	42.1	42.6	40.3	43.0	43.7
C1301	42.4	46.0	41.9	45.2	41.4	40.5	42.6	39.5	42.6	41.5

	Mean of 9 Tests	Percentage of Oil								
A-100	21.3	19.5	22.6	20.1	23.0	21.1	21.9	20.7	21.9	20.9
Chippewa	20.6	19.7	21.4	18.8	22.1	20.9	20.6	20.4	21.0	20.3
Chippewa 64	20.2	19.4	21.2	18.6	21.7	20.5	21.1	18.8	20.7	19.9
A1-540	20.2	18.7	21.6	18.4	22.2	20.1	21.2	18.2	21.6	20.0
A9-619	20.9	20.0	21.9	19.0	22.5	21.0	21.8	20.5	21.4	20.3
A9K-2558	20.0	19.5	21.7	19.2	21.7	21.1	20.2	17.7	19.4	19.6
C1255	20.6	19.2	22.0	18.9	21.8	21.0	21.0	20.0	21.6	20.2
C1296	19.5	18.3	21.3	17.7	21.3	20.2	19.5	18.8	19.7	19.0
C1299	19.2	17.5	20.3	17.5	21.4	19.8	20.0	19.1	19.0	18.4
C1301	19.2	18.2	19.9	17.9	20.3	19.4	19.9	18.8	19.4	18.6



Table 37. Three-year summary of data for Uniform Test I, 1962-1964.

Strain	Yield	Rank	Matu- rity <sup>1</sup>	Lodg- ing	Height	Seed Quality	Seed Weight	Seed Composition	
No. of Tests	53	53	43	43	52	38	44	Protein	Oil
								26	26
A-100	36.5	2	+7.5	1.9	35	1.8	18.0	39.7	21.2
Chippewa	34.3	4	0	1.9	34	1.9	14.6	40.4	20.3
Chippewa 64	34.5	3	+0.3	1.7	36	1.9	15.4	40.4	20.2
Cl255	37.6	1	+5.0	2.2	37	2.3	17.7	40.6	20.6

<sup>1</sup>Days earlier (-) or later (+) than Chippewa which matured September 16, 116 days after planting.

Table 38. Three-year summary of yield and yield rank for Uniform Test I, 1962-1964.

Strain	Mean of 53 Tests	Ridge- town Ont.	Harrow Ont.	Hoyt- ville Ohio	Woos- ter Ohio	Colum- bus Ohio	East Lan- sing Mich.	Dundee Mich. <sup>1</sup>	Walk- er- ton Ind.	Lafa- yette Ind.	Durand Wis.
Years Tested		1962- 1964	1963- 1964	1962- 1964	1962- 1964	1962- 1964	1962- 1964	1962- 1964	1962- 1964	1962- 1964	1962- 1963
A-100	36.5	43.2	37.4	35.6	29.4	36.3	36.0	35.9	34.7	44.6	20.0
Chippewa	34.3	42.5	35.2	29.4	28.2	32.9	33.0	31.0	31.6	41.6	16.1
Chippewa 64	34.5	44.0	36.7	30.0	26.9	32.8	32.3	31.3	33.9	41.3	16.7
Cl255	37.6	46.4	37.9	34.8	29.7	35.3	37.7	36.9	37.4	43.8	18.6

Yield Rank											
A-100	2	3	2	1	2	1	2	2	2	1	1
Chippewa	4	4	4	4	3	3	3	4	4	3	4
Chippewa 64	3	2	3	3	4	4	4	3	3	4	3
Cl255	1	1	1	2	1	2	1	1	1	2	2

<sup>1</sup>Ida, Michigan, 1962.

Table 38. (Continued)

Strain	Madi- son Wis.	Shab- bona Ill.	Dwight Ill.	St. Paul Minn.	Lam- ber- ton Minn.	Wa- seca Minn.	Cresco Iowa	Kana- wha Iowa	Eureka S.D.	Water- town S.D.	Brook- ings S.D.
Years Tested	1962- 1964	1962- 1964	1962- 1964	1963- 1964	1963- 1964	1962- 1964	1963- 1964	1962- 1964	1962, 1964	1962- 1964	1962- 1964
A-100	32.9	42.9	41.3	29.5	30.4	36.1	29.0	39.7	14.4	22.2	35.9
Chippewa	32.0	40.8	38.0	25.6	29.4	34.0	29.4	38.7	15.1	25.1	38.9
Chippewa 64	30.8	40.9	37.7	28.1	28.4	35.5	30.2	40.3	15.7	24.8	38.5
C1255	33.7	45.2	39.8	29.5	33.1	36.5	31.0	43.6	15.8	26.4	39.1

	Yield Rank										
A-100	2	2	1	1	2	2	4	3	4	4	4
Chippewa	3	4	3	4	3	4	3	4	3	2	2
Chippewa 64	4	3	4	3	4	3	2	2	2	3	3
C1255	1	1	2	1	1	1	1	1	1	1	1



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Strain	Originating Agency	Origin	Generation Composited
A-100	Freedolph and Hubert Anderson, St. Peter, Minn.	Unknown	
Chippewa	Ill. A.E.S. & U.S.R.S.L.	Lincoln (2) x Richland	F <sub>5</sub>
A2-5330	Iowa A.E.S. & U.S.R.S.L.	Adams x Chippewa	F <sub>7</sub>
A9-619	Iowa A.E.S. & U.S.R.S.L.	Clark x Chippewa	F <sub>4</sub>
A2-5405	Iowa A.E.S. & U.S.R.S.L.	Sel. from A9-619	F <sub>7</sub>
A2-5407	Iowa A.E.S. & U.S.R.S.L.	Clark x Chippewa	F <sub>7</sub>
A9K-2558	Iowa A.E.S. & U.S.R.S.L.	Hawkeye x Chippewa	F <sub>4</sub>
A2-5504	Iowa A.E.S. & U.S.R.S.L.	Sel. from A9K-2558	F <sub>7</sub>
M235	Minn. A.E.S. & U.S.R.S.L.	Lincoln (2) x Richland	F <sub>5</sub>
M413	Minn. A.E.S. & U.S.R.S.L.	Lincoln (2) x Richland	F <sub>5</sub>
M414	Minn. A.E.S. & U.S.R.S.L.	Lincoln (2) x Richland	F <sub>5</sub>
O-201855	Research Station, Harrow, Ontario	Hardome x Monroe	F <sub>5</sub>
W1-4120	Wis. A.E.S. & U.S.R.S.L.	Norchief x Clark	F <sub>6</sub>
W1-4221	Wis. A.E.S. & U.S.R.S.L.	Grant x Chippewa	F <sub>6</sub>
W1-4224	Wis. A.E.S. & U.S.R.S.L.	Grant x Chippewa	F <sub>6</sub>

A9-619 and A9K-2558 and their respective reselections had average yields close to that of A-100. The reselections were two days later than the parent strain in each case without any appreciable gain in yield. A9-619 had the best performance in the test but was quite susceptible to downy mildew. A2-5407 yielded well considering its earlier maturity.

Most of the remaining strains approximated Chippewa in maturity but yielded less and the M strains had very short plant height. W1-4221 was quite short but yielded slightly better than Chippewa. W1-4224 yielded well but was several days later than Chippewa.

Table 39. Descriptive data for the strains in Uniform Preliminary Test I, 1964.

Strain	Flower Color	Pubes- cence Color	Pod Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Shatter- ing*
A-100	W	G	Br	S	Y	Bf	1.0
Chippewa	P	T	Br	S	Y	B1	1.0
A2-5330	P	T	Tan	S	Y	B1	1.5
A9-619	P	T	Br	S	Y	B1	1.0
A2-5405	P	T	Br	S	Y	B1	1.0
A2-5407	P	T	Br	S	Y	B1	1.0
A9K-2558	P	T	Br	S	Y	B1	2.0
A2-5504	P	T	Br	S	Y	B1	2.0
M235	W	G	Br	D	Y	Y	1.7
M413	W	G	Br	D	Y	Y	2.0
M414	W	G	Br	D	Y	Y	2.0
O-201855	W	G	Br	S	Y	Y	3.2
W1-4120	P	T	Br	S	Y	B1	2.0
W1-4221	P	Lt	Br	S	Y	B1	4.0
W1-4224	P	Lt	Br	S	Y	B1	3.5

\*Average of 2 replications at Urbana, Illinois, planted May 6.

Table 40. Summary of data for Uniform Preliminary Test I, 1964.

Strain	Yield	Rank	Matu- rity <sup>1</sup>	Lodg- ing	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	9	9	6	6	8	9	9	7	7
A-100	36.5	5	+7.2	1.9	34	1.7	18.8	40.7	20.8
Chippewa	35.4	9	0	1.8	34	1.9	14.6	41.0	20.0
A2-5330	33.3	11	+3.8	1.6	37	1.8	14.5	40.7	20.3
A9-619	37.1	1	+5.0	1.5	35	1.9	16.9	41.4	20.2
A2-5405	37.1	1	+7.0	1.9	34	1.9	16.5	41.3	20.1
A2-5407	36.6	4	+1.5	1.7	35	1.7	15.5	41.4	20.2
A9K-2558	36.2	6	+3.3	1.7	34	2.0	17.5	41.9	20.1
A2-5504	36.8	3	+5.2	1.7	34	1.8	16.5	42.2	19.8
M235	33.3	11	-0.5	1.4	31	2.0	17.4	39.9	20.9
M413	33.0	13	0	1.4	31	2.2	17.8	39.7	21.0
M414	33.7	10	-0.5	1.6	31	2.1	17.1	39.7	21.0
O-201855	29.7	15	-0.8	2.4	37	2.0	16.2	41.3	19.8
W1-4120	32.8	14	+0.8	1.9	34	1.9	15.3	40.7	20.3
W1-4221	36.1	7	-0.8	2.1	32	1.9	16.6	41.3	20.3
W1-4224	35.5	8	+3.8	2.2	34	3.0	18.2	41.5	19.7

<sup>1</sup>Days earlier (-) or later (+) than Chippewa which matured September 16, 117 days after planting.

Table 41. Disease data for Uniform Preliminary Test I, 1964.

Strain	Bacterial	Brown	Phytophthora	Frogeye	Downy
	Blight	Stem Rot	Rot	Ind.	Mildew
	<u>Ill.</u> <u>a<sup>1</sup></u>	<u>Ill.</u> <u>n<sup>1</sup></u>	<u>Ind.</u> <u>a</u>	<u>Race 2</u> <u>a</u>	<u>Ind.</u> <u>n</u>
A-100	2	2	S	5	4
Chippewa	1	2	S	5	4
A2-5330	3	2	S	4	3
A9-619	2	2	S	4	5
A2-5405	3	3	S	4	4
A2-5407	2	3	S	4	3
A9K-2558	2	3	S	4	2
A2-5504	2	3	S	5	2
M235	3	2	S	4	5
M413	3	2	S	4	4
M414	3	3	S	5	5
O-201855	3	4	R	5	4
W1-4120	1	4	S	5	3
W1-4221	2	4	S	5	3
W1-4224	2	4	S	5	3

<sup>1</sup>a = artificial inoculation; n = natural infection.

Table 42. Yield and yield rank for Uniform Preliminary Test I, 1964.

Strain	Mean of 9 Tests	Ridge- town Ont.	Harrow Ont.	Hoyt- ville Ohio	Wooster Ohio *	Colum- bus Ohio	East Lansing Mich.
A-100	36.5	45.6	44.1	31.0	29.7	32.6	37.0
Chippewa	35.4	46.1	42.7	30.2	28.4	28.0	36.3
A2-5330	33.3	49.4	35.7	26.8	26.7	25.9	31.3
A9-619	37.1	55.3	40.4	29.0	26.4	27.6	38.7
A2-5405	37.1	50.8	43.7	33.2	28.6	25.8	39.1
A2-5407	36.6	48.5	45.0	31.1	26.7	29.1	38.5
A9K-2558	36.2	50.4	43.2	31.1	26.8	26.0	32.7
A2-5504	36.8	48.7	45.4	30.5	27.3	30.5	35.0
M235	33.3	45.8	35.4	26.4	20.6	27.3	33.8
M413	33.0	43.5	36.3	25.0	25.5	22.0	31.5
M414	33.7	46.0	41.4	20.9	25.5	27.4	31.1
O-201855	29.7	38.7	30.0	22.9	26.8	26.2	27.6
W1-4120	32.8	46.8	36.4	23.7	30.7	25.3	33.8
W1-4221	36.1	50.5	42.5	25.2	31.2	32.9	31.3
W1-4224	35.5	46.0	41.0	28.9	29.4	29.0	31.9
Coef. of Var. (%)		4.4	9.0	9.0	20.2	15.2	8.6
L.S.D. (5%)		4.4	7.8	5.3	N.S.	N.S.	6.2
Row Spacing (In.)		24	40	28	32	28	24

	Yield Rank						
A-100	5	13	3	4	3	2	4
Chippewa	9	9	6	6	6	6	5
A2-5330	11	5	13	9	10	12	12
A9-619	1	1	10	7	12	7	2
A2-5405	1	2	4	1	5	13	1
A2-5407	4	7	2	2	10	4	3
A9K-2558	6	4	5	2	8	11	9
A2-5504	3	6	1	5	7	3	6
M235	11	12	14	10	15	9	7
M413	13	14	12	12	13	15	11
M414	10	10	8	15	13	8	14
O-201855	15	15	15	14	8	10	15
W1-4120	14	8	11	13	2	14	7
W1-4221	7	3	7	11	1	1	12
W1-4224	8	10	9	8	4	5	10

\*Not included in the mean.

Table 42. (Continued)

Strain	Madi- son Wis.	Shab- bona Ill.	St. Paul Minn.	Kana- wha Iowa	Eureka S.D.	Water- town S.D.	Brook- ings S.D.
	*				*	*	
A-100	26.2	48.4	21.7	41.8	6.4	12.9	26.3
Chippewa	24.2	44.4	20.8	37.0	9.4	13.3	33.5
A2-5330	27.8	45.0	20.6	36.9	6.5	10.2	27.7
A9-619	27.6	51.6	23.4	40.9	8.1	12.8	27.2
A2-5405	26.3	50.2	21.4	41.1	7.9	13.5	29.0
A2-5407	23.6	46.0	20.7	40.6	9.2	12.8	29.5
A9K-2558	26.0	48.1	22.8	40.0	9.7	14.5	31.8
A2-5504	25.6	50.7	20.1	40.8	9.2	14.5	29.9
M235	19.9	43.6	22.8	38.2	9.0	11.0	26.5
M413	26.1	43.8	25.0	37.8	9.7	11.2	32.2
M414	--	44.7	25.4	39.2	9.5	11.8	26.9
O-201855	18.6	43.7	19.7	34.4	6.7	9.7	24.4
W1-4120	24.1	45.5	22.1	36.4	8.9	15.1	25.0
W1-4221	20.7	47.9	24.7	40.7	9.5	14.5	29.5
W1-4224	25.7	49.2	23.6	40.1	8.6	14.8	30.0
Coef. of Var. (%)	8.8	4.5	--	5.8	11.9	13.1	7.6
L.S.D. (5%)	4.2	4.5	--	4.8	2.2	2.5	4.6
Row Spacing (In.)	36	40	36	40	42	42	42

	Yield Rank						
A-100	4	5	9	1	15	8	13
Chippewa	9	12	11	12	5	7	1
A2-5330	1	10	13	13	14	14	9
A9-619	2	1	5	3	11	9	10
A2-5405	3	3	10	2	12	6	8
A2-5407	11	8	12	6	6	9	6
A9K-2558	6	6	6	8	1	3	3
A2-5504	8	2	14	4	6	3	5
M235	13	15	6	10	8	13	12
M413	5	13	2	11	1	12	2
M414	--	11	1	9	3	11	11
O-201855	14	14	15	15	13	15	15
W1-4120	10	9	8	14	9	1	14
W1-4221	12	7	3	5	3	3	6
W1-4224	7	4	4	7	10	2	4

Table 43. Maturity, days earlier (-) or later (+) than Chippewa for Uniform Preliminary Test I, 1964.

Strain	Mean of 6 Tests	Ridge- town Ont.	Harrow Ont.	Hoyt- ville Ohio	Wooster Ohio	Colum- bus Ohio	East Lansing Mich. <sup>1</sup>
				*	*		*
A-100	+7.2	+14	+8	+23	+8	0	--
Chippewa	0	0	0	0	0	0	0
A2-5330	+3.8	+10	+2	+ 3	+6	-3	0
A9-619	+5.0	+ 9	+5	+ 3	+7	-1	0
A2-5405	+7.0	+12	+5	+ 3	+6	-1	- 1
A2-5407	+1.5	+ 5	0	+ 2	+4	-2	- 1
A9K-2558	+3.3	+ 5	+2	+ 3	+5	-2	0
A2-5504	+5.2	+12	+2	+ 3	+4	-1	0
M235	-0.5	+ 3	+2	+23	+2	-5	--
M413	0	+ 4	+3	+24	+1	-5	--
M414	-0.5	+ 2	+2	+18	+2	-5	--
O-201855	-0.8	+ 2	0	+ 3	0	-6	-16
W1-4120	+0.8	+ 4	0	0	+1	-5	--
W1-4221	-0.8	+ 1	-2	0	-1	-5	+ 1
W1-4224	+3.8	+11	+2	+ 2	+4	-4	+ 1
Date planted	5-22	5-25	5-26	5-22	5-21	5-18	5-28
Chippewa matured	9-16	9-25	9-12	9-5	9-8	9-13	10-6
Days to mature	117	123	109	106	110	118	131

\*Not included in the mean.

<sup>1</sup>Missing dates due to frost before maturity.

Table 43. (Continued)

Strain	Madison Wis.	Shabbona Ill.	St. Paul Minn.	Kanawha Iowa	Eureka S.D.	Watertown S.D.	Brookings S.D.
	*		*		*	*	
A-100	+10	+7	--	+7	+3	+6	+7
Chippewa	0	0	0	0	0	0	0
A2-5330	+ 4	+5	--	+2	+2	+1	+7
A9-619	+ 5	+4	--	+6	+2	+3	+7
A2-5405	+ 6	+9	--	+8	+2	+4	+9
A2-5407	+ 2	+1	- 4	+2	+2	+1	+3
A9K-2558	+ 2	+5	+ 2	+4	+2	+2	+6
A2-5504	+ 2	+7	+ 2	+4	+2	+3	+7
M235	+ 2	-4	+ 4	0	-1	0	+1
M413	+ 1	-3	--	0	-2	+1	+1
M414	--	-2	- 2	-1	-1	0	+1
O-201855	- 7	0	-10	-2	-2	-1	+1
W1-4120	+ 2	+2	+ 1	+2	+2	+2	+2
W1-4221	- 2	-2	- 9	0	0	+1	+3
W1-4224	0	+4	+ 5	+3	+1	+6	+7
Date planted	5-19	5-18	5-14	5-18	5-21	5-20	5-29
Chippewa matured	9-9	9-11	9-22	9-8	9-22	9-24	9-29
Days to mature	113	116	131	113	124	127	123



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Strain	Originating Agency	Origin	Generation Composited
Harosoy	Research Station, Harrow, Ontario	Mandarin (Ottawa) (2) x A.K. (Harrow)	F <sub>5</sub>
Harosoy 63	Ill. A.E.S. & U.S.R.S.L.	Harosoy (8) x Blackhawk	3 F <sub>3</sub> lines
Hawkeye	Iowa A.E.S. & U.S.R.S.L.	Mukden x Richland	F <sub>4</sub>
Hawkeye 63	Ill. A.E.S. & U.S.R.S.L.	Hawkeye (7) x Blackhawk	11 F <sub>3</sub> lines
Lindarin	Purdue A.E.S. & U.S.R.S.L.	Mandarin (Ottawa) x Lincoln	F <sub>7</sub>
Lindarin 63 (C1315)	Purdue A.E.S. & U.S.R.S.L.	Lindarin (8) x Mukden	53 F <sub>3</sub> lines
Al-439	Iowa A.E.S. & U.S.R.S.L.	Harosoy x Capital	F <sub>9</sub>
Al-939	Iowa A.E.S. & U.S.R.S.L.	Adams x Harosoy	F <sub>8</sub>
Al-1051	Iowa A.E.S. & U.S.R.S.L.	Harosoy x Clark	F <sub>8</sub>
M402	Minn. A.E.S. & U.S.R.S.L.	Renville x Capital	F <sub>5</sub>

The four-year summary in Table 51 shows a .7 to 1.0 bushel lower yield for each of the three Phytophthora-resistant varieties, compared to their backcross parent. Harosoy 63 was slightly earlier, but in all other traits the backcross lines resembled their parents. The table also shows the yield advantage of Al-939.

M402 showed no advantage over Harosoy, except in lodging and shattering resistance. The two new entries in this test, Al-439 and Al-1051, performed very well relative to Al-939. Both were slightly earlier and shorter, but perhaps poorer in lodging resistance. Al-1051 had outstanding shattering resistance and Al-439 had less shattering than Al-939, which was nearly as poor as Harosoy.

Table 44. Regional testing history and descriptive data for the strains in Uniform Test II, 1964.

Strain	Years in Previous		Flower	Pubes-	Pod	Seed	Seed	Hilum	Shattering*	
	Uniform	Regional							Ur-	Gi-
	Test II	Test	Color	Color	Color	Luster	Color	Color	bana	rard
Harosoy	14	None	P	G	Br	D	Y	Y	3.7	4.8
Harosoy 63	4	None	P	G	Br	D	Y	Y	3.7	4.5
Hawkeye	18	--	P	G	Br	D	Y	Ib	2.2	2.8
Hawkeye 63	5	None	P	G	Br	D	Y	Ib	2.2	2.8
Lindarin	9	P.T. II	P	G	Br	D	Y	Bf	1.5	2.2
Lindarin 63	2	None	P	G	Br	D	Y	Bf	1.5	2.2
A1-439	1	P.T. II	P	G	Br	D	Y	Y	1.5	1.8
A1-939	2	None	P	G	Tan	S	Y	Y	3.2	3.2
A1-1051	1	P.T. II	P	T	Br	D	Y	Br	1.0	1.0
M402	2	P.T. I	W	T	Br	D	Y	Y	2.0	2.0

\*Average of 2 replications at Urbana, Illinois, planted May 6, and of 4 replications at Girard, Illinois.

Table 45. Summary of data for Uniform Test II, 1964.

Strain	Yield	Rank	Matu- rity <sup>1</sup>	Lodg- ing	Height	Seed Quality	Seed Weight	Seed Composition	
No. of Tests	29	29	23	24	29	24	22	Protein	Oil
Harosoy	35.6	5	+0.3	2.7	40	2.1	16.5	40.1	21.0
Harosoy 63	33.5	8	0	2.7	41	2.1	16.6	40.2	20.9
Hawkeye	33.4	9	+5.5	2.4	40	2.0	17.4	40.5	20.9
Hawkeye 63	32.5	10	+5.3	2.4	41	2.0	17.5	40.4	21.1
Lindarin	35.1	6	+1.2	1.9	36	1.9	15.1	40.3	21.0
Lindarin 63	34.4	7	+1.4	1.9	36	1.9	15.2	40.4	21.0
A1-439	38.5	1	+1.1	2.5	39	1.9	14.6	39.4	21.5
A1-939	37.8	2	+3.0	2.2	41	2.1	16.1	38.5	22.2
A1-1051	36.8	3	+1.7	2.4	36	1.8	19.1	42.6	20.7
M402	35.8	4	+0.8	1.5	36	2.2	15.9	38.7	22.2

<sup>1</sup>Days earlier (-) or later (+) than Harosoy 63 which matured September 14, 115 days after planting.

Table 46. Disease data for Uniform Test II, 1964.

Strain	Bacterial	Bacterial	Brown		Phytoph-	Frogeye		Downy		Chocolate
	Blight	Pustule	Stem	Rot	thora	Ind.		Mildew		Spot <sup>2</sup>
	<u>Ill.</u>	<u>Ill.</u>	<u>Ia.</u>	<u>Ill.</u>	<u>Rot</u>	<u>Race 1</u>	<u>Race 2</u>	<u>Ill.</u>	<u>Ind.</u>	<u>Ia.</u>
	<u>a<sup>1</sup></u>	<u>n<sup>1</sup></u>	<u>a</u>	<u>n</u>	<u>a</u>	<u>a</u>	<u>a</u>	<u>n</u>	<u>n</u>	<u>a</u>
Harosoy	2	3	4	4	S	R	5	1	1.3	4
Harosoy 63	3	3	4	4	R	R	5	1	1.5	3
Hawkeye	1	3	3	4	S	S	5	4	4.3	3
Hawkeye 63	2	3	3	4	R	S	5	4	4.8	4
Lindarin	3	4	4	4	S	R	4	1	2.5	3
Lindarin 63	1	4	4	3	R	R	5	2	2.0	5
Al-439	1	3	4	4	S	-	4	3	1.5	5
Al-939	1	4	3	4	S	R	4	2	1.3	3
Al-1051	1	4	4	4	S	-	5	3	3.8	3
M402	1	4	4	4	S	-	5	5	4.3	3

<sup>1</sup>a = artificial inoculation; n = natural infection.

<sup>2</sup>A bacterial disease producing symptoms similar to those of brown spot. The organism is unnamed.

Table 47. Yield and yield rank for Uniform Test II, 1964.

Strain	Mean of 29 Tests	Ridge- town Ont.	Har- row Ont.	Free- hold N.J.	Hoyt- ville Ohio	Woos- ter Ohio	Co- lum- bus Ohio	East Lan- sing Mich.	Dun- dee <sup>1</sup> Mich.	Walk- er- ton Ind.	Bluff- ton Ind.	Lafa- yette Ind.	Green- field Ind.	thing- ton Ind.	Madi- son Wis.
													*		
Harosoy	35.6	45.8	38.2	28.7	31.6	32.5	43.8	39.4	33.2	43.1	42.9	44.3	32.1	48.5	30.0
Har. 63	33.5	49.6	36.2	25.9	27.2	31.9	34.3	38.8	38.2	39.9	43.2	38.6	40.5	45.0	28.4
Hawkeye	33.4	43.6	37.3	22.6	26.7	30.4	39.1	37.3	31.5	36.7	38.4	45.6	27.9	42.1	30.6
Hawk. 63	32.5	43.5	38.0	20.9	25.2	31.7	34.1	39.5	32.3	36.4	39.6	47.3	40.4	39.5	28.9
Lindarin	35.1	50.0	40.6	26.1	29.2	26.8	41.5	41.9	34.7	37.7	41.8	39.5	29.4	49.4	30.8
Lind. 63	34.4	45.5	37.8	28.7	30.1	28.2	33.1	38.6	35.0	39.9	41.7	41.6	41.0	51.2	32.0
Al-439	38.5	52.7	36.3	27.8	28.0	32.4	36.5	41.6	40.0	43.0	49.8	49.9	38.3	50.0	33.0
Al-939	37.8	49.2	41.5	29.7	34.0	32.5	33.8	40.3	39.3	43.9	46.7	45.6	38.6	57.6	31.7
Al-1051	36.8	48.3	47.6	25.8	34.8	30.6	38.8	42.7	33.4	39.5	43.3	45.4	30.1	45.0	33.4
M402	35.8	54.7	40.9	29.0	32.3	32.4	40.2	42.1	36.6	37.0	40.5	44.6	21.9	43.3	33.5
C.V. (%)	8.2	6.4	--	8.4	15.5	15.0	6.7	7.8	8.8	4.8	7.3	13.6	6.0	10.4	
L.S.D. (5%)	5.8	3.7	N.S.	3.6	N.S.	N.S.	N.S.	4.8	5.0	3.0	4.6	6.8	4.1	N.S.	
R.Sp. (In.)	24	40	24	28	32	28	24	28	40	38	38	38	38	36	

	Yield Rank														
Harosoy	5	7	5	3	4	1	1	7	8	2	5	7	6	5	8
Har. 63	8	4	10	7	8	5	7	8	3	4	4	10	2	6	10
Hawkeye	9	9	8	9	9	8	4	10	10	9	10	3	9	9	7
Hawk. 63	10	10	6	10	10	6	8	6	9	10	9	2	3	10	9
Lindarin	6	3	4	6	6	10	2	3	6	7	6	9	8	4	6
Lind. 63	7	8	7	3	5	9	10	9	5	4	7	8	1	2	4
Al-439	1	2	9	5	7	3	6	4	1	3	1	1	5	3	3
Al-939	2	5	2	1	2	1	9	5	2	1	2	3	4	1	5
Al-1051	3	6	1	8	1	7	5	1	7	6	3	5	7	7	2
M402	4	1	3	2	3	3	3	2	4	8	8	6	10	8	1

\*Not included in the mean.

<sup>1</sup>Three replications.

Table 47. (Continued)

Strain	Shab- bona Ill.	Ur- Dwight Ill.	Gi- bana Ill.	Edge- rard Ill.	wood Ill.	El-do- rado Ill.	Car- bon- dale Ill.	Lam- ber- ton Minn.	Wa- seca Minn.	Suth- er- land Iowa	Kana- wha Iowa	Inde- dence Iowa	Ames Iowa	Co- lum- bia Mo.	Cen- ter- ville S.D.	Con- cord Nebr.
Har.	50.9	40.7	31.2	22.1	28.1	39.8	19.7	25.6	34.0	30.4	36.8	24.6	36.0	36.3	29.9	45.5
Hr.63	44.4	41.2	32.3	17.6	22.9	31.1	20.0	22.6	33.4	31.6	36.6	25.9	35.7	31.7	26.9	41.1
Hawk.	38.2	40.0	30.1	23.2	26.7	36.1	19.8	25.8	34.0	30.8	34.8	30.6	33.8	31.8	30.4	40.9
Hk.63	41.0	39.4	29.5	24.1	23.8	30.7	17.8	20.9	30.9	30.5	32.9	26.4	32.2	34.3	32.2	39.5
Lind.	46.8	41.9	30.8	28.8	29.4	41.0	17.0	24.5	36.2	31.2	33.4	27.6	35.9	33.6	29.2	39.7
Ln.63	45.3	39.5	28.6	31.2	26.5	38.5	18.3	23.5	33.3	31.4	35.1	27.4	33.0	33.3	29.4	39.8
-439	49.6	44.5	37.6	35.4	32.2	37.8	20.1	29.8	39.6	37.0	40.4	30.7	41.0	37.3	30.9	52.7
-939	51.5	43.5	33.8	31.0	32.1	49.0	20.0	25.4	36.8	34.4	36.4	27.6	37.0	37.1	32.6	41.6
-1051	45.3	42.9	33.4	35.5	30.3	43.4	20.4	26.7	36.3	35.4	37.4	27.4	36.4	34.7	32.4	40.9
M402	48.8	39.8	30.7	29.6	28.7	39.2	19.7	29.8	35.4	32.0	34.0	31.2	31.4	33.1	30.0	38.7
CV(%)	7.7	9.5	3.6	7.6	9.6	6.3	--	--	--	6.2	9.3	8.9	6.0	--	13.9	7.2
LSD(5%)	5.2	N.S.	1.7	3.1	3.9	3.5	--	--	--	2.8	4.5	3.4	2.8	--	6.1	4.4
RS(In.)	40	38	40	38	36	40	40	40	40	40	40	40	40	38	42	40

Yield Rank																
Har.	2	6	5	9	6	4	6	5	6	10	3	10	4	3	7	2
Hr.63	8	5	4	10	10	9	3	9	8	5	4	9	6	10	10	4
Hawk.	10	7	8	8	7	8	5	4	6	8	7	3	7	9	5	5
Hk.63	9	10	9	7	9	10	9	10	10	9	10	8	9	5	3	9
Lind.	5	4	6	6	4	3	10	7	4	7	9	4	5	6	9	8
Ln.63	6	9	10	3	8	6	8	8	9	6	6	6	8	7	8	7
-439	3	1	1	2	1	7	2	1	1	1	1	2	1	1	4	1
-939	1	2	2	4	2	1	3	6	2	3	5	4	2	2	1	3
-1051	6	3	3	1	3	2	1	3	3	2	2	6	3	4	2	5
M402	4	8	7	5	5	5	6	1	5	4	8	1	10	8	6	10

Table 48. Maturity days earlier (-) or later (+) than Harosoy 63, and lodging for Uniform Test II, 1964.

Strain	Mean of 23 Tests	Ridge- town Ont.	Har- row Ont.	Co-				East		Walk-		Bluff-Lafa-		Green-thing-Madi-	
				Free- hold N.J.	Hoyt- ville Ohio	Woos- ter Ohio	lum- bus Ohio	Lan- sing Mich <sup>1</sup>	Dun- dee Mich <sup>1</sup>	er- ton Ind.	ton Ind.	ette Ind.	field Ind.	ton Ind.	son Wis.
				*	*			*	*					*	*
Harosoy	+0.3	0	0		- 3	0	-1			+1	+1	0	0		+2
Har. 63	0	0	0		0	0	0			0	0	0	0		0
Hawkeye	+5.5	+1	+2		+14	+3	+3			+8	+6	+4	+1		+6
Hawk. 63	+5.3	+1	+2		+11	+2	+2			+9	+6	+4	+2		+5
Lindarin	+1.2	+1	0		+ 4	0	+1			+4	+1	+3	-2		+4
Lind. 63	+1.4	+1	0		+ 7	+1	+1			+2	0	+3	-1		+4
Al-439	+1.1	0	+1		+14	0	+1			+5	+3	-1	0		+1
Al-939	+3.0	+1	+1		+ 1	+2	+1			+4	+5	-2	-2		+4
Al-1051	+1.7	0	+2		+10	-1	-1			+3	+3	0	-2		+3
M402	+0.8	0	+1		+15	0	0			+2	0	+6	-1		+4
Date pltd.	5-22	5-25	5-26	5-25	5-22	5-21	5-18	5-29	5-25	5-22	5-21	5-19	5-18	5-26	5-19
Har.63 mat.	9-14	10-4	9-20	--	9-13	9-20	9-14	--	--	9-16	9-10	9-12	9-14	--	9-18
Da. to mat.	115	132	117	--	114	122	119	--	--	117	112	116	119	--	122
	Mean of 24 Tests														
						*							*		*
Harosoy	2.7	3.0	2.5	5.0	3.0	1.0	1.2	3.0	4.0	2.5	2.0	2.0	1.8	3.8	1.0
Har. 63	2.7	3.0	3.0	5.0	3.0	1.0	1.2	2.0	4.0	2.0	2.3	2.0	2.5	4.0	1.0
Hawkeye	2.4	2.0	3.5	4.0	2.5	1.0	1.2	2.0	3.0	1.5	2.0	2.0	1.3	3.5	1.0
Hawk. 63	2.4	3.0	3.5	4.0	2.0	1.0	1.2	2.0	3.0	2.3	1.8	2.0	2.0	3.5	1.0
Lindarin	1.9	2.0	2.0	4.0	2.0	1.0	1.0	2.0	2.0	1.8	1.5	2.0	1.0	2.3	1.0
Lind. 63	1.9	2.0	2.0	3.0	2.2	1.0	1.0	2.0	2.0	1.8	1.5	2.0	2.0	2.3	1.0
Al-439	2.5	3.0	2.0	5.0	2.2	1.0	1.5	2.0	3.0	2.3	2.0	2.0	2.3	3.3	1.0
Al-939	2.2	2.0	1.5	4.0	2.2	1.0	1.0	2.0	3.0	2.3	2.5	2.0	2.5	2.8	1.0
Al-1051	2.4	3.0	3.0	4.0	3.0	1.0	1.0	2.0	3.0	1.8	2.5	1.0	1.5	2.8	1.0
M402	1.5	2.0	2.0	3.0	1.0	1.0	1.0	1.0	1.0	1.3	2.0	1.0	1.3	2.0	1.0

\*Not included in the mean.

<sup>1</sup>Missing dates due to frost before maturity.

Table 48. (Continued)

Strain	Shab- bona Ill.	Ur- Dwight Ill.	Gi- bana Ill.	Edge- rard Ill.	El- wood Ill.	Car- rado Ill.	Lam- ber- ton Minn.	Wa- seca Minn.	Suth- er- land Iowa	Kana- pen- wha Iowa	Inde- dence Iowa	Co- Ames Iowa	Cen- lum- ter- S.D.	Con- cord Nebr. <sup>1</sup>
														*
Har.	0	+1	0	+1	0	0	0	0	+1	+ 2	0	0	0	+1
Hr. 63	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hawk.	+3	+4	+8	+8	+3	+3	+6	+10	+7	+10	+5	+7	+5	+4
Hk. 63	+4	+3	+7	+7	+3	+3	+5	+10	+8	+10	+5	+7	+4	+4
Lind.	0	-2	+1	+1	0	0	+3	+ 5	0	+1	+ 3	+2	+1	0
Ln. 63	+1	0	+2	+1	0	0	+4	+ 5	0	+1	+ 3	+2	+1	+1
-439	+2	+2	-1	+1	0	+3	-2	+ 4	0	+1	+ 5	+2	0	-2
-939	+2	+2	+4	+7	0	-1	+7	+ 2	+ 6	+4	+ 6	+2	+3	+6
-1051	+1	+2	+2	+4	+2	+2	+3	+ 4	+ 2	+1	+ 2	0	+1	+2
M402	-1	-3	0	+3	-2	-5	+2	+ 6	+ 1	+3	+ 1	0	0	+1
D.P.	5-18	6-16	5-11	5-21	6-2	6-4	5-25	5-18	5-21	5-20	5-18	5-22	5-15	5-4
Mat.	9-22	10-1	8-29	8-27	9-4	9-8	8-28	9-19	10-2	9-13	9-14	9-16	9-10	8-20
D.to m.	127	107	110	98	94	96	95	124	134	116	119	117	118	108
														122
														118

Lodging														
	*													*
Har.	3.4	3.7	1.5	1.4	3.4	4.6	1.0	2.5	3.0	1.5	2.0	1.4	1.8	1.0 1.8
Hr. 63	3.3	3.6	1.5	1.3	4.2	4.6	1.0	2.5	3.0	1.6	1.9	1.4	1.8	1.0 1.8
Hawk.	3.3	3.0	1.4	1.4	2.3	4.1	1.0	3.0	3.0	1.3	1.8	1.5	1.6	1.0 1.8
Hk. 63	3.1	2.8	1.4	1.5	2.6	4.5	1.0	3.0	3.0	1.3	1.6	1.5	1.5	1.0 2.0
Lind.	3.2	2.3	1.3	1.3	1.6	1.6	1.0	2.0	2.3	1.2	1.6	1.2	1.6	1.0 1.0
Ln. 63	3.2	2.3	1.3	1.3	1.9	2.1	1.0	2.2	2.2	1.2	1.6	1.3	1.7	1.0 1.0
-439	3.3	3.3	1.6	1.4	2.3	4.5	1.0	3.5	2.8	1.5	1.9	1.4	1.8	1.0 2.0
-939	3.0	3.2	1.4	1.6	2.6	3.0	1.0	2.8	3.0	1.5	1.6	1.5	1.6	1.0 1.5
-1051	3.5	3.8	1.4	1.6	3.1	3.4	1.0	2.5	2.5	1.4	2.0	1.3	1.5	1.0 2.0
M402	2.3	1.4	1.2	1.1	1.1	1.4	1.0	2.3	2.3	1.2	1.6	1.2	1.4	1.0 1.0



Table 49. Plant height and seed quality for Uniform Test II, 1964.

Strain	Mean of 24 Tests														
	Ridge-Har-	Free-Hoyt-	Woos-lum-	Co-	East	Walk-	Wor-	Bluff-Lafa-	Green-thing-	Madi-	son	Wis.			
	of 29	town row	hold ville	ter	bus	sing dee	ton ton	ton	yette	field	ton	son			
	Tests	Ont.	Ont.	N.J.	Ohio	Ohio	Ohio	Mich.	Mich.	Ind.	Ind.	Ind.	Ind.	Ind.	Wis.
													*		
Harosoy	40	48	34	40	34	27	42	28	38	42	50	44	42	48	25
Har. 63	41	47	35	40	33	27	41	29	38	44	49	45	43	51	24
Hawkeye	40	46	36	37	34	26	40	27	37	43	46	46	41	46	24
Hawk. 63	41	46	38	36	35	27	43	27	39	43	49	46	43	44	24
Lindarin	36	44	32	36	29	26	36	26	36	36	43	40	38	41	24
Lind. 63	36	44	34	37	31	27	40	27	36	38	43	39	40	46	24
Al-439	39	47	31	37	32	28	39	28	37	42	47	45	41	46	24
Al-939	41	47	36	40	31	27	41	29	37	44	50	47	44	50	24
Al-1051	36	43	36	36	31	27	38	26	35	37	42	42	39	45	24
M402	36	43	33	35	31	27	39	28	35	37	42	40	36	42	24
	Mean of 24 Tests	Seed Quality													
										*			*		
Harosoy	2.1	2.0	2.0	2.0	2.0	1.0	2.0	3.0	2.0	1.0	1.0	1.5	1.5	1.5	2.0
Har. 63	2.1	2.0	2.0	2.0	1.7	1.0	2.0	3.0	2.0	1.0	1.0	1.5	1.5	1.5	2.0
Hawkeye	2.0	3.0	1.0	2.0	1.7	1.5	1.7	2.0	2.0	1.0	1.0	1.5	1.5	1.5	1.0
Hawk. 63	2.0	3.0	1.0	2.0	1.5	1.0	2.0	2.0	2.0	1.0	1.0	1.5	1.5	1.5	1.0
Lindarin	1.9	2.0	1.2	1.0	2.0	1.0	2.0	3.0	2.0	1.0	1.0	1.5	1.0	1.5	2.0
Lind. 63	1.9	2.0	1.0	1.0	2.0	1.2	2.2	2.0	2.0	1.0	1.0	1.5	1.0	1.5	2.0
Al-439	1.9	2.0	2.0	2.0	1.7	1.0	2.7	2.0	2.0	1.0	1.0	1.5	1.5	1.5	1.0
Al-939	2.1	2.0	2.8	2.0	2.0	1.0	1.2	3.0	2.0	1.0	1.0	1.5	2.0	1.5	2.0
Al-1051	1.8	2.0	1.0	1.0	1.5	1.0	2.0	2.0	2.0	1.0	1.5	1.0	1.0	2.0	1.0
M402	2.2	2.0	1.0	1.0	2.0	1.0	2.0	3.0	3.0	1.0	1.0	1.5	1.5	2.0	2.0

\*Not included in the mean.

Table 49. (Continued)

Strain	Shab- bona Ill.	Dwight Ill.	Ur- bana Ill.	Gi- rard Ill.	Edge- wood Ill.	Eldo- rado Ill.	Car- bon- dale Ill.	Lam- ber- ton Minn.	Wa- seca Minn.	Suth- er- land Iowa	Kana- wha Iowa	Inde- pen- dence Iowa	Ames Iowa	Co- lum- bia Mo.	ter- ville S.D.	Con- cord Nebr.
Har.	48	43	43	40	39	47	34	39	44	41	47	46	44	37	34	44
Hr. 63	50	43	42	41	40	47	35	42	43	44	46	47	44	39	36	44
Hawk.	47	42	42	41	40	43	33	43	44	44	48	46	45	40	33	43
Hk. 63	48	43	42	41	41	44	34	43	43	45	47	45	46	40	36	44
Lind.	42	36	38	35	35	38	28	35	36	36	42	38	37	33	36	41
Ln. 63	42	38	38	36	34	39	29	37	37	38	44	37	38	34	29	42
-439	47	41	42	38	38	41	33	40	41	40	45	44	42	34	32	43
-939	50	44	44	42	41	45	32	41	42	44	48	44	46	39	36	45
-1051	42	37	38	36	36	40	29	36	38	39	42	36	38	34	32	39
M402	43	36	39	34	35	40	29	38	36	37	40	38	36	33	28	36

Seed Quality																
										*	*	*	*			
Har.	1.5	2.0	2.1	2.8	2.9	3.5	2.0	3.5	3.3	1.0	1.0	1.0	1.0	2.5	2.0	1.3
Hr. 63	1.5	1.8	2.0	2.5	2.9	3.3	2.0	3.5	3.5	1.0	1.0	1.0	1.0	2.5	2.0	1.3
Hawk.	1.5	1.8	2.1	3.0	2.8	3.8	2.0	3.8	3.5	1.0	1.0	1.0	1.0	1.5	2.0	1.4
Hk. 63	1.5	1.6	2.3	3.0	2.6	4.0	2.0	3.8	3.2	1.0	1.0	1.0	1.0	1.5	1.0	1.1
Lind.	1.5	1.1	1.5	2.8	2.0	3.8	2.0	3.8	3.5	1.0	1.0	1.0	1.0	1.0	2.0	1.1
Ln. 63	1.5	1.3	1.4	2.6	2.0	3.9	2.0	3.8	3.2	1.0	1.0	1.0	1.0	1.5	2.0	1.1
-439	1.5	1.3	1.4	2.3	2.0	3.3	2.0	3.5	3.2	1.0	1.0	1.0	1.0	2.0	1.0	1.5
-939	1.8	1.5	1.8	3.4	2.9	3.6	2.0	3.5	3.5	1.0	1.0	1.0	1.0	2.0	1.0	1.3
-1051	1.3	1.3	2.0	2.3	1.5	3.3	2.0	3.5	3.5	1.0	1.0	1.0	1.0	2.0	2.0	1.4
M402	2.0	1.5	2.5	3.9	2.6	3.1	3.0	3.5	3.8	1.0	1.0	1.0	1.0	3.0	2.0	1.3

Table 50. Percentages of protein and oil for Uniform Test II, 1964.

Strain	Mean of 15 Tests	Harrow Ont.	Free- hold N.J.	Colum- bus Ohio	Dundee Mich.	Walk- erton Ind.	Lafa- yette Ind.	Madi- son Wis.
Harosoy	40.1	41.5	42.9	38.9	44.4	39.8	39.1	40.3
Harosoy 63	40.2	41.2	42.9	39.6	44.1	39.9	39.3	39.5
Hawkeye	40.5	40.7	43.4	40.1	44.2	40.3	39.5	40.6
Hawkeye 63	40.4	40.9	43.6	40.1	43.8	40.8	39.8	40.0
Lindarin	40.3	40.9	44.3	39.7	44.8	40.3	39.8	41.3
Lindarin 63	40.4	40.9	44.7	39.9	44.3	39.8	39.7	40.6
A1-439	39.4	40.3	42.9	39.1	42.6	39.7	38.6	39.0
A1-939	38.5	38.9	41.8	38.1	41.5	38.7	38.2	38.9
A1-1051	42.6	43.7	45.4	40.8	46.2	43.2	41.7	42.4
M402	38.7	39.8	42.8	38.2	41.4	39.0	38.2	38.4
Percentage of Oil								
	Mean of 15 Tests							
Harosoy	21.0	20.6	20.3	21.4	18.3	21.8	22.5	20.9
Harosoy 63	20.9	20.8	20.2	21.2	18.3	22.0	22.1	21.0
Hawkeye	20.9	21.0	20.2	21.4	18.3	21.3	22.8	20.8
Hawkeye 63	21.1	21.5	20.4	21.6	18.0	21.9	22.4	21.0
Lindarin	21.0	21.2	19.6	21.6	17.7	21.7	22.5	20.7
Lindarin 63	21.0	20.3	20.2	21.5	17.8	21.0	22.5	21.0
A1-439	21.5	21.2	21.5	21.6	19.0	22.2	22.4	21.6
A1-939	22.2	21.9	21.6	22.4	19.8	22.9	22.8	22.7
A1-1051	20.7	20.3	20.1	21.4	18.1	21.1	21.7	20.5
M402	22.2	21.3	21.4	22.6	18.2	23.3	23.6	22.1

Table 50. (Continued)

Strain	Shab- bona Ill.	Ur- bana Ill.	Eldo- rado Ill.	Lamber- ton Minn.	Kana- wha Iowa	Ames Iowa	Center- ville S.D.	Con- cord Nebr.
Harosoy	39.5	39.4	41.1	38.1	38.6	39.3	39.3	40.0
Harosoy 63	40.2	39.6	41.7	37.6	38.7	38.9	39.8	39.9
Hawkeye	40.7	39.5	40.6	38.4	39.0	38.9	40.0	41.1
Hawkeye 63	39.9	39.3	41.6	38.0	39.3	38.0	40.1	41.0
Lindarin	39.8	40.0	41.0	37.5	38.7	37.9	39.7	39.5
Lindarin 63	39.5	40.4	41.9	38.7	38.7	38.5	39.3	39.4
A1-439	38.6	39.4	41.6	37.1	38.0	38.9	37.3	38.6
A1-939	37.7	38.5	38.7	36.3	37.7	36.9	36.9	38.4
A1-1051	42.8	41.5	44.4	39.8	42.7	41.0	41.3	42.0
M402	38.1	39.3	39.1	35.7	36.8	37.3	38.0	37.9

	Percentage of Oil							
Harosoy	21.0	20.7	21.7	20.9	21.4	22.1	22.2	18.8
Harosoy 63	21.2	21.1	20.9	20.8	21.7	21.5	21.9	19.5
Hawkeye	20.6	21.9	21.5	20.5	20.2	21.5	21.8	19.0
Hawkeye 63	21.2	21.9	21.7	20.6	21.0	21.9	21.6	19.5
Lindarin	21.5	20.4	21.5	20.4	21.6	22.5	21.9	19.7
Lindarin 63	21.3	20.6	21.8	21.3	21.5	22.1	21.8	20.0
A1-439	21.5	21.2	21.2	21.9	21.9	22.1	22.6	20.0
A1-939	22.5	21.2	23.3	22.9	22.9	23.0	23.2	20.5
A1-1051	20.7	21.4	21.2	21.5	21.0	21.3	21.4	19.3
M402	23.0	21.9	21.9	22.7	23.1	23.3	23.4	21.4

Table 51. Four-year summary of data for Uniform Test II, 1961-1964.

Strain	Yield	Rank	Matu- rity <sup>1</sup>	Lodg- ing	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	110	110	86	99	109	89	88	70	70
Harosoy	37.7	2	+0.7	2.7	41	2.0	17.5	40.6	20.7
Harosoy 63	36.9	4	0	2.7	42	2.0	17.4	40.7	20.8
Hawkeye	35.2	6	+4.6	2.4	41	1.9	17.6	41.0	20.8
Hawkeye 63	34.2	7	+4.8	2.4	41	2.0	17.4	40.9	20.9
Lindarin	37.2	3	+0.6	2.0	37	1.9	15.7	40.8	20.9
Lindarin 63	36.3	5	+0.3	2.2	38	2.0	15.9	40.6	21.0
Al-939	40.2	1	+3.0	2.3	42	2.1	17.0	39.2	21.8

<sup>1</sup>Days earlier (-) or later (+) than Harosoy 63 which matured September 18, 119 days after planting.

Table 52. Four-year summary of yield and yield rank for Uniform Test II, 1961-1964.

Strain	Mean	Ridge-Har-	Free-Hoyt-Woos-	Co-	East	Walk-	Wor-							
	of 110	town	row	hold	ville	ter	bus	Lan-	Dun-	er-	Bluff-Lafa-	Green-thing-		
	Tests	Ont.	Ont.	N.J.	Ohio	Ohio	Ohio	Mich.	Mich. <sup>3</sup>	Ind.	Ind.	Ind.	Ind.	Ind.
Years		1961-1962-	1962-1961-	1961-1961-	1961-1961-	1961-1961-	1961-1961-	1961-1961-	1961-	1961-	1961-	1961-	1961-	1961-
Tested		1964	1964	1964	1964	1964	1964	1964	1964	1964	1964	1964	1964	1964
Harosoy	37.7	45.4	32.4	34.0	33.9	33.2	38.9	35.6	34.6	41.1	42.4	44.4	33.8	45.9
Har. 63	36.9	44.9	33.1	31.0	32.9	33.3	36.9	35.5	34.5	38.6	43.0	43.0	40.0	46.7
Hawkeye	35.2	38.1	33.7	30.0	30.5	32.5	35.7	32.3	31.3	33.9	39.8	41.8	29.7	44.2
Hawk. 63	34.2	37.7	32.8	29.5	28.4	31.8	34.5	31.7	32.1	36.5	39.6	41.1	38.1	41.8
Lindarin	37.2	43.4	34.6	31.1	31.8	31.4	38.2	35.2	33.8	35.6	41.9	41.9	34.1	48.0
Lind. 63 <sup>1</sup>	36.3	41.0	33.5	31.8	32.0	31.1	35.3	34.6	34.6	37.9	42.5	41.4	41.7	46.7
Al-939 <sup>2</sup>	40.2	49.3	36.2	34.9	35.1	32.7	35.1	37.0	36.0	43.9	47.0	46.5	36.7	52.9

Yield Rank

Harosoy	2	2	7	2	2	2	1	2	2	2	4	2	6	5
Har. 63	4	3	5	5	3	1	3	3	4	3	2	3	2	3
Hawkeye	6	6	3	6	6	4	4	6	7	7	6	5	7	6
Hawk. 63	7	7	6	7	7	5	7	7	6	5	7	7	3	7
Lindarin	3	4	2	4	5	6	2	4	5	6	5	4	5	2
Lind. 63	5	5	4	3	4	7	5	5	2	4	3	6	1	3
Al-939	1	1	1	1	1	3	6	1	1	1	1	1	4	1

<sup>1</sup>C1315 in 1963, C1294 in 1961.

<sup>2</sup>AX56P64-1 in 1961 and 1962.

<sup>3</sup>Ida, Michigan, 1961-1962.



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Strain	Originating Agency	Origin	Generation Compositied
Harosoy 63	Ill. A.E.S. & U.S.R.S.L.	Harosoy (8) x Blackhawk	3 F <sub>3</sub> lines
Al-939	Iowa A.E.S. & U.S.R.S.L.	Adams x Harosoy	F <sub>8</sub>
C1253	Purdue A.E.S. & U.S.R.S.L.	Blackhawk x Harosoy	F <sub>6</sub>
C1328	Purdue A.E.S. & U.S.R.S.L.	Harosoy x C1069	F <sub>6</sub>
C1329	Purdue A.E.S. & U.S.R.S.L.	Harosoy x C1069	F <sub>6</sub>
C1335	Purdue A.E.S. & U.S.R.S.L.	Harosoy x C1069	F <sub>6</sub>
C1342	Purdue A.E.S. & U.S.R.S.L.	Harosoy x C1069	F <sub>6</sub>
C1344	Purdue A.E.S. & U.S.R.S.L.	Harosoy x C1069	F <sub>6</sub>
L62-361	Ill. A.E.S. & U.S.R.S.L.	Harosoy (6) x T117	F <sub>3</sub>
L62-1932	Ill. A.E.S. & U.S.R.S.L.	Clark (6) x P.I. 86024	F <sub>3</sub>
M401	Minn. A.E.S. & U.S.R.S.L.	Capital x M10	F <sub>5</sub>
M405	Minn. A.E.S. & U.S.R.S.L.	Grant x Harosoy	F <sub>5</sub>
W1-4243	Wis. A.E.S. & U.S.R.S.L.	Blackhawk x Seneca	F <sub>6</sub>

Identification of Parent Strains

C1069	F <sub>7</sub> line from Lincoln x Ogden, from same F <sub>4</sub> line as Kent, in Uniform Test IV in 1954-58.
M10	Sel. from Lincoln (2) x Richland, in Uniform Test I in 1949-51.
P.I. 86024	Introduced from the Tokachi Branch Experiment Station, Obihiro, Japan, in 1930.

C1253, selected from Blackhawk x Harosoy, performed similarly to Harosoy 63 except for lower average yield and slightly higher protein content. The remaining five C strains, all from Harosoy x C1069, matured from 1 to 5 days later than Al-939 but did not yield as well.

L62-361 is a BC<sub>5</sub> Harosoy line with a gene for determinate stem (Dt<sub>2</sub>) transferred from T117. This gene brought about an 8-inch average reduction in plant height without any measurable yield loss and lodging was considerably improved. These plants stopped flowering a few days before Harosoy 63 and therefore ripened a few days earlier.

L62-1932 is a BC<sub>5</sub> Clark line with a gene for earliness transferred from P.I. 86024. It matured almost as early as Harosoy 63 and yielded slightly better. As expected, it was shorter and resisted lodging and shattering better than Harosoy 63, but the large seed size was an unexpected result.

The two M strains were among the earliest in the test and yielded well for their maturity. W1-4243 appeared to equal Al-939 in most respects but with somewhat less plant height.

Table 53. Descriptive data for the strains in Uniform Preliminary Test II, 1964.

Strain	Flower Color	Pubes- cence Color	Pod Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Shatter- ing*
Harosoy 63	P	G	Br	D	Y	Y	3.5
A1-939	P	G	Tan	S	Y	Y	3.5
C1253	P	G	Br	S	Y	Ib	3.2
C1328	P	G	Br	D	Y	Y	2.7
C1329	P	G	Br	D	Y	Y	1.0
C1335	P	G	Br	D	Y	G	1.0
C1342	P	T	Br	S	Y	Y	1.5
C1344	P	T	Br	D	Y	Y	2.7
L62-361	P	G	Br	D	Y	Y	4.0
L62-1932	P	T	Br	D	Y	B1	1.0
M401	P	T	Br	D	Y	Br	1.7
M405	W	T	Br	D	Y	Y	2.7
W1-4243	P	Lt	Br	D	Y	B1	2.7

\*Average of 2 replications at Urbana, Illinois, planted May 6.



Table 54. Summary of data for Uniform Preliminary Test II, 1964.

Strain	Yield	Rank	Matu- rity <sup>1</sup>	Lodg- ing	Height	Seed Quality	Seed Weight	Seed Composition	
No. of Tests	17	17	13	13	17	14	13	Protein	Oil
								10	10
Harosoy 63	36.8	7	0	2.3	40	1.9	17.4	40.5	20.6
A1-939	40.2	1	+2.5	2.1	40	1.9	17.0	38.9	21.6
C1253	35.0	13	+0.5	2.3	40	1.7	17.1	41.7	20.7
C1328	36.6	8	+3.2	2.1	39	1.9	17.7	39.0	22.1
C1329	38.8	4	+4.5	1.9	38	2.0	18.3	39.7	21.3
C1335	39.3	3	+6.7	1.9	37	2.3	19.2	41.8	20.3
C1342	36.5	9	+8.0	2.6	40	2.3	17.4	40.5	20.4
C1344	36.1	12	+7.2	2.7	41	2.3	17.7	41.4	20.2
L62-361	36.2	11	-4.2	1.6	32	1.7	15.8	40.3	21.0
L62-1932	37.8	6	+1.9	2.0	35	1.8	18.7	41.1	20.8
M401	36.3	10	-4.0	2.1	34	2.0	14.6	39.0	21.1
M405	38.1	5	-1.1	1.5	34	1.9	16.5	38.7	22.2
W1-4243	40.2	1	+2.3	2.2	37	1.8	16.7	40.0	20.8

<sup>1</sup>Days earlier (-) or later (+) than Harosoy 63 which matured September 16, 118 days after planting.

Table 55. Disease data for Uniform Preliminary Test II, 1964.

Strain	Bacterial	Brown	Phytophthora	Frogeye		Downy
	<u>Blight</u>	<u>Stem Rot</u>	<u>Rot</u>	<u>Ind.</u>		<u>Mildew</u>
	<u>Ill.</u> <u>a<sup>1</sup></u>	<u>Ill.</u> <u>n<sup>1</sup></u>	<u>Ind.</u> <u>a</u>	<u>Race 1</u> <u>a</u>	<u>Race 2</u> <u>a</u>	<u>Ind.</u> <u>n</u>
Harosoy 63	2	4	R	R	5	1.5
A1-939	2	4	S	R	4	1.3
C1253	1	4	R	S	5	4
C1328	2	3	S	R	5	2
C1329	1	3	S	R	1	3
C1335	1	3	S	R	2	1
C1342	1	3	S	R	5	1
C1344	2	3	S	R	5	1
L62-361	1	4	S	-	5	2
L62-1932	2	4	S	-	5	4
M401	1	1	S	-	5	3
M405	1	2	S	-	5	5
W1-4243	1	2	S	-	5	4

<sup>1</sup>a = artificial inoculation; n = natural infection.

Table 56. Yield and yield rank for Uniform Preliminary Test II, 1964.

Strain	Mean of 17 Tests	Ridge- town Ont.	Harrow Ont.	Hoyt- ville Ohio	Woos- ter Ohio	Colum- bus Ohio	East Lansing Mich.	Walker- ton Ind.	Lafa- yette Ind.
Harosoy 63	36.8	46.8	37.2	33.3	33.6	33.7	41.3	43.4	42.1
A1-939	40.2	50.3	41.0	35.5	37.1	40.1	39.5	49.0	52.8
C1253	35.0	40.9	35.2	28.7	30.4	25.7	38.2	43.7	46.9
C1328	36.6	45.6	42.6	32.8	28.4	32.2	36.9	42.5	45.1
C1329	38.8	45.5	45.4	33.3	31.6	28.8	43.3	44.5	48.2
C1335	39.3	50.0	35.1	33.7	35.6	29.4	39.9	45.3	50.8
C1342	36.5	46.3	39.4	30.3	32.9	27.9	35.3	44.1	44.8
C1344	36.1	47.3	37.9	31.7	33.2	23.0	39.7	46.2	42.8
L62-361	36.2	48.2	31.7	30.5	30.0	32.1	40.9	39.5	37.2
L62-1932	37.8	52.3	45.3	36.0	32.4	36.4	43.3	37.6	44.0
M401	36.3	50.3	39.6	27.9	31.9	27.3	40.9	39.7	43.7
M405	38.1	52.2	44.4	34.5	33.2	41.5	43.4	40.6	44.7
W1-4243	40.2	52.5	48.1	34.5	39.4	33.8	45.4	40.9	48.2
Coef. of Var. (%)		6.6	6.6	8.2	12.7	16.6	7.3	9.4	8.1
L.S.D. (5%)		N.S.	5.8	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
Row Spacing (In.)		24	40	28	32	28	24	40	38

	Yield Rank								
Harosoy 63	7	9	10	6	4	5	5	7	12
A1-939	1	4	6	2	2	2	10	1	1
C1253	13	13	11	12	11	12	11	6	5
C1328	8	11	5	8	13	6	12	8	6
C1329	4	12	2	6	10	9	3	4	3
C1335	3	6	12	5	3	8	8	3	2
C1342	9	10	8	11	7	10	13	5	7
C1344	12	8	9	9	5	13	9	2	11
L62-361	11	7	13	10	12	7	6	12	13
L62-1932	6	2	3	1	8	3	3	13	9
M401	10	4	7	13	9	11	6	11	10
M405	5	3	4	3	5	1	2	10	8
W1-4243	1	1	1	3	1	4	1	9	3

Table 56. (Continued)

Strain	Madi- son Wis.	Dwight Ill.	Urbana Ill.	Waseca Minn.	Kana- wha Iowa	Ames Iowa	Colum- bia Mo.	Center- ville S.D.	Con- cord Nebr.
Harosoy 63	27.1	38.9	34.9	33.4	35.4	35.4	33.9	33.6	42.4
A1-939	26.4	43.6	34.2	36.8	34.2	40.6	39.7	40.0	43.2
C1253	21.8	36.5	34.4	33.8	37.2	35.6	38.5	30.9	37.3
C1328	26.5	45.0	35.4	33.4	30.3	34.0	34.5	36.7	41.0
C1329	28.6	47.0	39.1	36.3	36.9	36.6	41.5	35.6	38.1
C1335	32.1	47.6	35.5	36.5	34.4	39.6	41.4	43.1	38.3
C1342	25.5	43.7	34.8	31.8	33.6	35.2	36.1	37.5	41.4
C1344	27.3	41.7	31.6	32.4	39.6	35.9	30.8	38.1	35.0
L62-361	24.7	42.5	36.6	34.8	39.0	32.6	35.2	32.1	47.0
L62-1932	29.7	43.7	37.4	36.2	35.5	34.6	37.5	34.3	27.0
M401	23.4	41.3	33.7	34.6	38.6	36.3	28.2	32.9	47.4
M405	27.1	39.6	31.4	36.2	37.8	31.6	34.0	34.9	39.8
W1-4243	26.3	39.9	33.5	39.8	39.9	40.7	38.4	36.1	45.6
Coef. of Var. (%)	8.3	7.7	9.7	--	10.5	6.3	--	9.6	8.6
L.S.D. (5%)	4.7	N.S.	N.S.	--	8.3	4.9	--	7.5	7.6
Row Spacing (In.)	36	38	40	40	40	40	38	42	40

Yield Rank

	5	12	6	10	9	8	11	10	5
Harosoy 63	5	12	6	10	9	8	11	10	5
A1-939	8	6	9	2	11	2	3	2	4
C1253	13	13	8	9	6	7	4	13	11
C1328	7	3	5	10	13	11	9	5	7
C1329	3	2	1	4	7	4	1	7	10
C1335	1	1	4	3	10	3	2	1	9
C1342	10	4	7	13	12	9	7	4	6
C1344	4	8	12	12	2	6	12	3	12
L62-361	11	7	3	7	3	12	8	12	2
L62-1932	2	4	2	5	8	10	6	9	13
M401	12	9	10	8	4	5	13	11	1
M405	5	11	13	5	5	13	10	8	8
W1-4243	9	10	11	1	1	1	5	6	3

Table 57. Maturity, days earlier (-) or later (+) than Harosoy 63, for Uniform Preliminary Test II, 1964.

Strain	Mean of 13 Tests	Ridge- town Ont.	Harrow Ont.	Hoyt- ville Ohio	Woos- ter Ohio	Colum- bus Ohio	East Lansing Mich. <sup>1</sup>	Walker- ton Ind.	Lafa- yette Ind.
				*			*		
Harosoy 63	0	0	0	0	0	0		0	0
A1-939	+2.5	+1	+3	+ 6	+3	+2		- 1	-1
C1253	+0.5	+1	+2	+21	+1	0		- 1	-3
C1328	+3.2	+1	+3	+19	+1	+3		+ 5	-1
C1329	+4.5	+1	+4	+19	+4	+6		+ 4	+2
C1335	+6.7	+2	+5	+19	+5	+6		+ 7	+4
C1342	+8.0	+1	+8	+15	+5	+6		+ 9	+7
C1344	+7.2	+3	+6	+19	+5	+6		+ 9	+8
L62-361	-4.2	-3	-4	0	0	+1		-13	-7
L62-1932	+1.9	+1	+3	+10	+1	0		- 2	0
M401	-4.0	-8	-7	+19	0	0		-12	-6
M405	-1.1	-1	-1	+20	+1	+1		- 4	-6
W1-4243	+2.3	+2	+2	+10	+2	+2		+ 4	-2
Date planted	5-21	5-25	5-26	5-22	5-21	5-18	5-29	5-22	5-19
Harosoy 63 matured	9-16	10-5	9-20	9-9	9-20	9-12	--	9-22	9-14
Days to mature	118	133	117	110	122	117	--	123	118

\*Not included in the mean.

<sup>1</sup>Missing dates due to frost before maturity.

Table 57. (Continued)

Strain	Madi- son Wis.	Dwight Ill.	Urbana Ill.	Waseca Minn. <sup>1</sup>	Kana- wha Iowa	Ames Iowa	Colum- bia Mo.	Center- ville S.D.	Con- cord Nebr. <sup>1</sup>
				*					*
Harosoy 63	0	0	0	0	0	0	0	0	0
A1-939	+ 2	+1	+ 2	+6	+ 7	+ 6	+2	+5	--
C1253	- 2	+2	+ 2	+1	+ 1	+ 2	+2	0	--
C1328	+ 6	+2	+ 5	+7	+ 5	+ 4	+4	+4	--
C1329	+ 6	+3	+ 9	+6	+ 5	+ 6	+5	+4	--
C1335	+15	+2	+ 8	--	+ 9	+10	+7	+7	--
C1342	+10	+4	+10	--	+15	+14	+8	+7	--
C1344	+ 9	+4	+ 9	--	+14	+12	+2	+6	--
L62-361	- 2	-8	- 3	-8	- 7	- 4	-3	-2	+2
L62-1932	+ 6	0	+ 3	+8	+ 5	+ 6	-2	+4	+2
M401	0	-9	- 2	-2	- 1	- 2	-3	-2	+2
M405	+ 2	-6	0	-1	- 1	0	+1	0	+2
W1-4243	0	-1	+ 3	+5	+ 8	+ 6	0	+4	--
Date planted	5-19	6-16	5-11	5-21	5-18	5-15	5-4	5-25	5-29
Harosoy 63 matured	9-18	10-1	8-30	10-2	9-15	9-10	8-21	9-24	9-24
Days to mature	122	107	111	134	120	118	109	122	118

UNIFORM TEST III - 1964

Strain	Originating Agency	Origin	Generation Compositd
Ford	Iowa A.E.S. & U.S.R.S.L.	Lincoln (2) x Richland	F <sub>9</sub>
Shelby	Ill. A.E.S. & U.S.R.S.L.	Lincoln (2) x Richland	F <sub>8</sub>
Wayne (L57-2222)	Ill. A.E.S. & U.S.R.S.L.	L49-4091 x Clark	F <sub>5</sub>
C1276	Purdue A.E.S. & U.S.R.S.L.	Mandarin (Ottawa) x Clark	F <sub>6</sub>
C1317-71	Purdue A.E.S. & U.S.R.S.L.	C1223 (8) x Mukden	F <sub>3</sub>
C1317-99	Purdue A.E.S. & U.S.R.S.L.	C1223 (8) x Mukden	F <sub>3</sub>
L60-1312	Ill. A.E.S. & U.S.R.S.L.	Shelby x Clark	F <sub>3</sub>
L61-1112	Ill. A.E.S. & U.S.R.S.L.	Clark (3) x T117	F <sub>3</sub>
S9-2504	Mo. A.E.S. & U.S.R.S.L.	Radiated Clark	R <sub>5</sub>

Identification of Parent Strains

C1223	F <sub>6</sub> line from C1070 x Adams, in Uniform Test III in 1960-61. C1070 is a F <sub>7</sub> line from Lincoln x Ogden, from same F <sub>4</sub> line as Kent.
L49-4091	Pustule-resistant F <sub>4</sub> line from [F <sub>3</sub> Lincoln (2) x Richland] x (Lincoln x CNS), in Uniform Test IV in 1951 and III in 1952-53.

Table 58. Regional testing history and descriptive data for the strains in Uniform Test III, 1964.

Strain	Years in Uniform Test III	Previous Regional Test	Flower Color	Pubes- cence Color	Pod Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Shattering* George- town	Ur- bana
Ford	9	None	W	T	Br	S	Y	B1	1.4	1.7
Shelby	13	None	P	T	Br	D	Y	B1	1.0	1.0
Wayne	4	P.T. III	W	T	Br	S	Y	B1	2.0	1.7
C1276	2	P.T. III	P	T	Br	D	Y	B1	1.0	1.0
C1317-71	1	None	W	G	Tan	S	Y	Bf	1.5	1.7
C1317-99	1	None	W	G	Tan	S	Y	Bf	2.0	1.5
L60-1312	1	P.T. III	P	T	Br	D	Y	B1	1.0	1.0
L61-1112	1	P.T. III	P	T	Br	D	Y	B1	1.1	1.0
S9-2504	2	P.T. III	P	T	Br	D	Y	B1	1.0	1.0

\*Average of 4 replications at Georgetown, Delaware, planted May 19 and 2 replications at Urbana, Illinois, planted May 6.

Four-year means for Wayne, Shelby, and Ford are given in Tables 65 and 66 showing the superior yield of Wayne at most locations. C1276 and S9-2504, which ranked 1 and 2 in yield last year, averaged only slightly above Shelby this year and well below Wayne. C1276 had good lodging resistance and high protein content but short plant height. The two selections from C1317 performed much like C1317 did in last year's test, yielding between Shelby and Wayne. L60-1312 seemed to be no improvement over Shelby, whereas L61-1112, another new entry, yielded unusually well at a few locations and averaged second only to Wayne. L61-1112 is of interest since it carries a dominant gene for determinate main stem (Dt<sub>2</sub>), introduced along with other traits from T117 into a predominately Clark genetic background.

### WAYNE

Wayne was named and publicity released in August 1964 by the states of Illinois, Indiana, Iowa, Kansas, Missouri, and Nebraska. It is an F<sub>4</sub> plant progeny selected from the cross, L49-4091 x Clark, for bacterial pustule resistance, and good agronomic appearance and performance. It is somewhat similar to Shelby and Ford in maturity and general appearance but has consistently outyielded them. In some tests its stems have remained green after maturity. It has shown iron chlorosis in soils with high pH (which is also characteristic of L49-4091). Judging by its high yields in field tests where susceptible varieties were reduced in yield by Phytophthora rot, it has considerable field tolerance or resistance to this disease. Wayne has white flowers, brown pubescence, brown pods, and a shiny yellow seed coat with a black hilum.

The following is an outline of its development:

- |         |                |   |
|---------|----------------|---|
| 1951-53 |                | L49-4091, an F <sub>3</sub> plant progeny from the cross L44-1219 x (Lincoln x CNS) selected for pustule resistance, early maturity, and lodging resistance, was tested in Uniform Test IV (1951) and III (1952-53). L44-1219 was an F <sub>3</sub> line from Lincoln (2) x Richland selected for agronomic appearance. |
| 1953    |                | The cross L49-4091 x L59-5138 (Clark) was made in the field at Urbana by Dr. Robert D. Osler for the purpose of transferring bacterial pustule resistance.  |
| 1953-54 | F <sub>1</sub> | Five plants were grown in the greenhouse.   |
| 1954    | F <sub>2</sub> | Seventy-eight plants were harvested without selection.  |
| 1955    | F <sub>3</sub> | Progenies of 78 F <sub>2</sub> plants were grown at Urbana in 8-foot rows, pustule-inoculated, and rated for pustule reaction. 187 plants (1 to 3 plants from each of 68 rows), including over 100 resistant ones, were selected.   |
| 1956    | F <sub>4</sub> | Progeny rows from 187 F <sub>3</sub> plants were grown at Urbana, inoculated, and rated for pustule reaction. Resistant plants were selected for plant vigor and lodging resistance; in addition, resistant and susceptible plants were harvested in segregating rows for isoline development.                          |



- 1957 F<sub>5</sub> Rows from 148 F<sub>4</sub> plants were grown at Urbana and also at Eldorado. Rows were pustule-inoculated and the resistance of 95 rows was confirmed. 39 of these (including row 2222) were selected for good plant vigor and lodging resistance.
- 1958 F<sub>6</sub> L57-2222 was tested at three locations in Illinois in unreplicated rod-row plots with 139 other Group III lines (38 from the same cross), and it ranked 32nd in mean yield.
- 1959 F<sub>7</sub> Tested at three Illinois locations with two replications with 44 other Group III experimental strains, and it ranked 7th in mean yield.
- 1960 Tested in Uniform Preliminary Test III and ranked 1st in mean yield.
- 1961-64 Tested in Uniform Test III and ranked 1st in yield each year except 1963 when it was 3rd.
- 1961 Fifty plants taken from Urbana seed increase block and threshed individually.
- 1962 Isolation block of 50 plant progenies were grown. Because of poor stand, only 31 lines were harvested. These were bulked giving a total of 44 pounds of breeder seed, of which four pounds were placed in cold storage.

Increase for certified seed:

State	1962 Breeder Seed		1963 Foundation Seed			1964 Foundation Seed	
	Production	Allotment*	Planted	Harvested	Distribution	Acres	Production
Illinois	40#	40%	33#	54 bu.	28 bu.	50	1600 bu.
Indiana	--	17%	7#	45 bu.	45 bu.	98	2994 bu.
Iowa	--	10%	--	--	7 bu.	11	398 bu.
Kansas	--	7%	--	--	5 bu.	7	231 bu.
Missouri	--	17%	--	--	12 bu.	32	400 bu.
Nebraska	--	3%	--	--	2 bu.	2	56 bu.
Ohio	--	6%	--	--	(declined)	--	--
Total	40#	100%	40#	99 bu.	99 bu.	200	5679 bu.

\*In proportion to 1961 commercial acreage of Shelby, Lincoln, and Ford, plus one-half that of Clark.

Table 59. Summary of data for Uniform Test III, 1964.

Strain	Yield	Rank	Matu- rity <sup>1</sup>	Lodg- ing	Height	Seed Quality	Seed Weight	Seed Composition	
No. of Tests	21	21	20	18	21	20	15	Protein	Oil
								9	9
Ford	34.6	9	-1.5	1.8	39	2.3	16.2	40.2	21.6
Shelby	35.3	7	0	1.9	40	2.1	15.6	39.7	22.1
Wayne	39.1	1	+2.6	1.8	40	2.1	16.9	40.9	21.3
C1276	35.5	6	+6.2	1.5	35	2.1	18.2	42.0	21.6
C1317-71	36.3	4	+1.3	1.6	39	2.3	16.4	38.8	22.7
C1317-99	36.4	3	-0.1	1.6	39	2.1	16.5	38.6	22.6
L60-1312	35.2	8	+1.3	1.8	40	2.0	15.6	40.5	22.1
L61-1112	37.5	2	+3.6	1.7	34	1.8	15.2	40.5	21.0
S9-2504	36.1	5	+4.8	1.8	39	2.1	16.3	40.0	21.9

<sup>1</sup>Days earlier (-) or later (+) than Shelby which matured September 21, 121 days after planting.

Table 60. Disease data for Uniform Test III, 1964.

Strain	Bacterial		Brown	Phytophthora	Frogeye		Downy		Chocolate
	Pustule		Stem Rot	Rot	Ind.		Mildew		Spot <sup>2</sup>
	Ill. n <sup>1</sup>	Ia. a <sup>1</sup>	Ill. n	Ind. a	Race 1 a	Race 2 a	Ill. n	Ind. n	Ia. a
Ford	4	3	4	S	R	5	4	4.3	4
Shelby	4	3	3	S	R	4	3	3.0	3
Wayne	1	1	3	S	R	3	4	4.0	2
C1276	3	3	3	S	R	5	3	1.8	3
C1317-71	3	3	3	R	R	1	3	4.5	4
C1317-99	4	4	3	R	R	1	4	4.5	3
L60-1312	3	3	3	S	-	5	3	3.5	2
L61-1112	4	2	3	S	-	4	3	3.0	3
S9-2504	4	3	3	S	-	5	4	4.0	2

<sup>1</sup>a = artificial inoculation; n = natural infection.

<sup>2</sup>A bacterial disease producing symptoms similar to those of brown spot. The organism is unnamed.

Table 61. Yield and yield rank for Uniform Test III, 1964.

Strain	Mean of 21 Tests	Har- row Ont.	Free- hold N.J.	New- ark Del.	George- town Del. <sup>1</sup>	Hoyt- ville Ohio	Woos- ter Ohio	Co- lum- bus Ohio	Bluff- ton Ind.	Lafa- yette Ind.	Green- field Ind.	Wor- thing- ton Ind.
			*									
Ford	34.6	43.5	18.2	37.9	27.1	32.6	32.9	36.4	39.8	49.7	39.7	42.7
Shelby	35.3	43.3	14.5	37.2	22.3	34.9	30.3	29.9	39.8	50.1	40.6	49.2
Wayne	39.1	45.1	23.9	33.5	27.3	36.0	37.9	35.4	43.0	52.5	42.3	56.0
C1276	35.5	37.6	26.0	34.9	27.3	28.2	28.5	28.2	36.0	44.6	40.1	55.1
C1317-71	36.3	47.6	26.6	39.7	24.8	33.9	31.1	31.5	42.4	46.9	42.7	42.2
C1317-99	36.4	47.8	25.1	44.4	27.9	31.3	28.9	35.5	39.3	48.0	41.6	48.7
L60-1312	35.2	42.4	17.9	37.7	26.8	30.9	31.3	29.9	39.5	47.3	39.5	49.3
L61-1112	37.5	44.8	20.9	39.6	24.3	29.7	31.3	29.7	42.5	53.5	41.4	52.6
S9-2504	36.1	44.3	20.8	37.3	21.3	31.4	30.8	29.1	39.7	47.2	40.1	53.3
C. V. (%)		6.2	20.7	7.8	14.4	12.1	9.0	13.2	4.4	7.6	6.9	7.7
L.S.D. (5%)		4.0	6.4	4.1	N.S.	5.5	4.1	6.0	2.5	5.3	N.S.	5.5
Row Sp. (In.)		40	24	36	36	28	32	28	38	38	38	38

	Yield Rank											
Ford	9	6	7	4	4	4	2	1	4	4	8	8
Shelby	7	7	9	7	8	2	7	5	4	3	5	6
Wayne	1	3	4	9	2	1	1	3	1	2	2	1
C1276	6	9	2	8	2	9	9	9	9	9	6	2
C1317-71	4	2	1	2	6	3	5	4	3	8	1	9
C1317-99	3	1	3	1	1	6	8	2	8	5	3	7
L60-1312	8	8	8	5	5	7	3	5	7	6	9	5
L61-1112	2	4	5	3	7	8	3	7	2	1	4	4
S9-2504	5	5	6	6	9	5	6	8	6	7	6	3

\*Not included in the mean.

<sup>1</sup>Irrigated.

Table 61. (Continued)

Strain	Evans-ville Ind.	Ur-bana Ill.	Gi-rard Ill.	Edge-wood Ill.	Eldo-rado Ill.	Car-bon- dale Ill.	Ames Iowa	Ot-tum- wa Iowa	Co-lum- bia Mo.	Pow-hat- tan Kans.	Man-hat- tan Kans.	Man-hat- tan Kans. <sup>1</sup>	Grand Junc- tion Colo. <sup>1</sup>
Ford	33.0	30.8	33.9	32.4	40.9	18.0	32.7	35.3	33.8	20.0	33.1	31.2	17.3
Shelby	40.7	34.5	34.2	32.3	42.0	20.9	31.0	37.9	29.6	21.7	39.1	35.2	17.9
Wayne	41.1	37.2	41.3	36.2	47.0	24.6	37.8	42.8	35.4	25.2	43.6	36.4	20.0
C1276	38.0	35.2	35.8	36.9	47.0	26.6	33.3	39.0	31.0	24.2	38.8	33.6	21.7
C1317-71	37.2	37.7	39.0	27.7	41.1	22.3	33.2	42.1	37.3	21.5	39.4	35.7	20.4
C1317-99	33.8	33.7	38.1	27.5	44.1	19.9	31.4	43.4	37.2	24.3	38.6	32.6	19.8
L60-1312	36.8	33.5	34.9	35.3	40.5	22.6	31.9	39.0	31.4	22.9	36.4	32.2	19.2
L61-1112	45.9	38.2	38.2	35.1	48.6	23.6	32.4	40.8	33.5	24.9	36.0	30.8	15.8
S9-2504	37.9	36.0	36.9	35.9	47.1	26.9	29.8	35.1	33.5	23.7	41.0	31.9	19.8
C. V. (%)	6.3	8.4	5.8	7.4	7.3	--	7.0	7.9	--	12.2	5.2	10.3	13.8
L.S.D. (5%)	3.5	4.3	3.1	3.6	4.7	--	3.1	4.4	--	N.S.	2.9	5.1	N.S.
Row Sp. (In.)	40	40	38	36	40	40	40	40	38	40	40	36	24

Yield Rank

Ford	9	9	9	6	8	9	4	8	4	9	9	8	8
Shelby	3	6	8	7	6	7	8	7	9	7	4	3	7
Wayne	2	3	1	2	3	3	1	2	3	1	1	1	3
C1276	4	5	6	1	3	2	2	5	8	4	5	4	1
C1317-71	6	2	2	8	7	6	3	3	1	8	3	2	2
C1317-99	8	7	4	9	5	8	7	1	2	3	6	5	4
L60-1312	7	8	7	4	9	5	6	5	7	6	7	6	6
L61-1112	1	1	3	5	1	4	5	4	5	2	8	9	9
S9-2504	5	4	5	3	2	1	9	9	5	5	2	7	4

Table 62. Maturity, days earlier (-) or later (+) than Shelby, and lodging for Uniform Test III, 1964.

Strain	Mean of 20 Tests	Har- row Ont.	Free- hold N.J.	New- ark Del.	George- town Del. <sup>1</sup>	Hoyt- ville Ohio	Woos- ter Ohio	Co- lum- bus Ohio	Bluff- ton Ind.	Lafa- yette Ind.	Green- field Ind.	Wor- thing- ton Ind.
			*									
Ford	-1.5	-1	+1	-1	-5	0	0	-6	+6	-2	-1	+1
Shelby	0	0	0	0	0	0	0	0	0	0	0	0
Wayne	+2.6	+2	+2	+1	-1	+9	+3	+4	+6	+7	+2	+5
C1276	+6.2	+3	+2	+4	+6	+9	+5	+1	+7	+8	+7	+6
C1317-71	+1.3	+1	0	+2	-2	+9	+4	0	+5	+1	0	-2
C1317-99	-0.1	+2	0	+1	-4	0	+1	+1	+3	0	0	-2
L60-1312	+1.3	+1	+1	+2	+1	0	0	+1	+2	0	+3	+3
L61-1112	+3.6	+3	+4	+3	+1	+9	+2	+1	+7	+5	+4	+3
S9-2504	+4.8	+4	+3	+4	+4	+9	+1	+2	+6	+6	+4	+3
Date pltd.	5-23	5-26	5-25	6-1	5-19	5-22	5-21	5-18	5-21	5-19	5-18	5-26
Shelby mat.	9-21	10-1	9-22	9-22	9-15	9-28	9-29	9-27	9-23	9-23	9-20	9-20
Days to mat.	121	128	120	113	119	129	131	132	125	127	125	117
	Mean of 18 Tests							Lodging				
			*				*					
Ford	1.8	2.5	5.0	2.3	1.1	1.5	1.0	1.0	2.3	2.0	1.8	2.5
Shelby	1.9	3.8	4.0	2.1	1.4	1.7	1.0	1.0	2.3	2.0	2.0	2.5
Wayne	1.8	2.8	4.0	2.3	1.3	1.0	1.0	1.0	2.0	2.0	1.5	2.3
C1276	1.5	2.2	2.0	1.5	1.0	1.5	1.0	1.0	1.8	1.0	1.0	2.3
C1317-71	1.6	2.8	3.0	2.0	1.1	1.5	1.0	1.0	1.0	2.0	1.8	2.3
C1317-99	1.6	2.8	4.0	2.3	1.1	1.7	1.0	1.0	1.0	2.0	1.3	2.3
L60-1312	1.8	3.2	4.0	2.6	1.3	1.5	1.0	1.0	2.0	2.0	1.8	2.5
L61-1112	1.7	3.2	4.0	2.5	1.3	1.5	1.0	1.2	2.3	1.0	1.5	2.8
S9-2504	1.8	3.0	3.0	2.3	1.3	2.2	1.0	1.0	2.0	2.0	1.3	2.0

\*Not included in the mean.

<sup>1</sup>Irrigated.

Table 62. (Continued)

Strain	Evans- ville Ind.	Ur- bana Ill.	Gi- rard Ill.	Edge- wood Ill.	Eldo- rado Ill.	Car- bon- dale Ill.	Ames Iowa	Ot- tum- wa Iowa	Co- lum- bia Mo.	Pow- hat- tan Kans.	Man- hat- tan Kans.	Man- hat- tan Kans. <sup>1</sup>	Grand Junc- tion Colo. <sup>1</sup>
	*											*	*
Ford		-2	-5	-5	-2	- 3	-2	-2	+1	0	-1	0	-2
Shelby		0	0	0	0	0	0	0	0	0	0	0	0
Wayne		0	+3	-1	+1	+ 1	+2	+2	+2	+1	+3	0	0
C1276		+7	+9	+7	+7	+14	+7	+4	+6	+4	+2	+6	+6
C1317-71		0	+2	-7	-2	+14	-1	0	-3	+4	0	0	+8
C1317-99		0	+1	-8	-2	+ 8	-1	0	-4	+2	0	0	+8
L60-1312		+1	+3	+1	+4	+ 4	0	-1	+2	-1	0	+1	0
L61-1112		+2	+8	+2	+5	+ 7	+2	+2	+2	+2	+2	+1	+1
S9-2504		+4	+6	+4	+5	+12	+6	+5	+6	+1	+4	+6	+9
Date pltd.	5-14	5-11	5-21	6-2	6-4	5-25	5-15	5-16	5-4	6-4	6-2	6-28	5-23
Shelby mat.	--	9-15	9-11	9-17	9-14	9-13	9-24	9-20	8-31	9-29	10-2	10-4	9-24
Days to mat.	--	127	113	107	102	111	132	127	119	117	122	98	124

	Lodging											
						*				*	*	
Ford	1.8	1.4	2.0	2.2	2.5	1.0	1.4	1.6	1.1	1.3	1.3	1.0
Shelby	2.3	1.3	2.0	2.0	2.1	1.0	1.4	1.6	1.2	1.7	1.5	1.0
Wayne	2.3	1.5	2.3	1.7	2.8	1.0	1.6	1.6	1.2	1.8	1.4	1.0
C1276	1.0	1.4	1.5	1.2	1.9	1.0	1.8	1.5	1.2	1.4	1.3	1.0
C1317-71	1.5	1.3	1.3	1.9	1.7	1.0	1.3	1.6	1.2	1.5	1.5	1.0
C1317-99	1.3	1.3	1.3	2.1	1.9	1.0	1.3	1.5	1.3	1.4	1.4	1.0
L60-1312	1.8	1.3	2.1	1.9	2.4	1.0	1.6	1.5	1.1	1.4	1.6	1.0
L61-1112	1.8	1.2	1.6	1.8	2.3	1.0	1.5	1.5	1.1	1.3	1.5	1.0
S9-2504	1.5	1.4	1.8	1.7	2.2	1.0	1.5	1.5	1.2	1.7	1.5	1.0

Table 63. Plant height and seed quality for Uniform Test III, 1964.

Strain	Mean of 21 Tests	Har- row Ont.	Free- hold N.J.	New- ark Del.	George- town Del. <sup>1</sup>	Hoyt- ville Ohio	Woos- ter Ohio	Co- lum- bus Ohio	Bluff- ton Ind.	Lafa- yette Ind.	Green- field Ind.	Wor- thing- ton Ind.
			*									
Ford	39	39	38	38	32	34	30	39	44	45	41	45
Shelby	40	41	38	41	35	33	31	40	45	48	44	49
Wayne	40	40	38	36	32	30	30	37	47	46	43	46
C1276	35	35	35	30	30	32	27	38	40	38	36	41
C1317-71	39	40	39	36	29	32	27	39	46	44	41	46
C1317-99	39	40	38	40	29	34	30	39	46	43	40	47
L60-1312	40	41	41	40	34	33	33	40	47	47	44	48
L61-1112	34	37	37	30	29	32	30	38	42	39	37	40
S9-2504	39	38	37	35	32	32	31	40	44	45	42	47

	Mean of 20 Tests	Seed Quality										
			*									
Ford	2.3	1.0	1.0	2.0	4.0	2.0	2.0	2.7	2.0	1.5	2.0	2.0
Shelby	2.1	1.2	1.0	2.0	2.9	1.2	1.7	2.0	1.0	1.0	1.5	2.0
Wayne	2.1	1.0	1.0	1.9	3.8	1.5	1.2	1.5	1.0	1.5	1.5	2.0
C1276	2.1	1.0	2.0	2.0	1.6	1.7	1.5	1.2	1.0	1.0	1.5	2.0
C1317-71	2.3	1.0	1.0	1.6	3.4	1.5	1.5	2.0	1.5	1.5	2.0	2.0
C1317-99	2.1	1.0	1.0	1.4	3.5	1.5	2.0	2.5	1.0	1.0	1.5	2.5
L60-1312	2.0	1.5	1.0	1.6	2.4	1.0	1.7	2.2	1.0	1.5	1.5	2.0
L61-1112	1.8	1.5	1.0	1.6	3.0	1.0	1.0	2.0	1.0	1.0	1.0	1.5
S9-2504	2.1	1.5	1.0	2.3	2.5	1.2	1.2	1.7	1.0	1.5	1.5	2.0

\*Not included in the mean.

<sup>1</sup>Irrigated.

Table 63. (Continued)

Strain	Evans- ville Ind.	Ur- bana Ill.	Gi- rard Ill.	Edge- wood Ill.	Eldo- rado Ill.	Car- bon- dale Ill.	Ames Iowa	Ot- tum- wa Iowa	Co- lum- bia Mo.	Pow- hat- tan Kans.	Man- hat- tan Kans.	Man- hat- tan Kans. <sup>1</sup>	Grand Junc- tion Colo. <sup>1</sup>
Ford	49	43	41	39	44	31	45	44	39	24	30	31	33
Shelby	50	44	42	40	45	32	47	45	40	23	35	33	34
Wayne	48	43	42	41	45	31	47	46	40	24	36	34	30
C1276	44	36	36	36	39	26	40	41	36	22	33	29	30
C1317-71	49	44	41	38	43	31	46	46	37	22	33	33	33
C1317-99	48	43	41	39	44	28	44	44	38	24	31	32	34
L60-1312	49	43	42	40	45	34	47	46	40	23	34	33	34
L61-1112	43	37	36	35	36	27	40	34	33	23	26	26	29
S9-2504	46	41	40	38	43	29	46	45	40	24	35	32	34

Seed Quality												
							*					*
Ford	4.0	2.8	1.6	2.8	4.1	2.0	1.0	3.3	1.5	1.5	1.2	1.2
Shelby	4.0	2.5	1.8	2.3	4.5	2.0	1.0	3.5	1.5	1.6	1.1	1.2
Wayne	4.0	2.5	2.3	2.4	4.8	2.0	1.0	2.8	2.0	1.7	1.3	1.3
C1276	4.0	2.5	1.8	2.1	4.8	4.0	1.0	4.2	2.0	1.3	1.4	1.2
C1317-71	3.5	3.0	3.3	2.4	4.5	3.0	1.0	3.3	1.0	1.6	1.4	1.2
C1317-99	3.5	3.0	3.0	2.0	4.4	2.0	1.0	3.0	1.0	1.4	1.3	1.2
L60-1312	3.5	2.4	2.3	2.5	4.8	2.0	1.0	3.0	1.5	1.2	1.2	1.1
L61-1112	3.0	2.1	2.4	2.1	4.3	2.0	1.0	2.4	1.1	1.1	1.2	1.2
S9-2504	3.5	2.3	2.3	2.3	5.0	3.0	1.0	3.7	1.5	1.3	1.2	1.2



Table 64. Percentages of protein and oil for Uniform Test III, 1964.

Strain	Mean of 9 Tests	Free- hold N.J. *	George- town Del. <sup>1</sup>	Colum- bus Ohio	Lafa- yette Ind.	Wor- thington Ind.
Ford	40.2	45.2	43.1	40.9	39.9	39.6
Shelby	39.7	44.0	42.7	40.2	39.3	39.0
Wayne	40.9	43.3	43.3	41.4	40.6	40.4
C1276	42.0	45.6	43.7	42.7	41.9	42.2
C1317-71	38.8	41.8	40.5	39.4	38.8	38.7
C1317-99	38.6	41.9	40.3	39.0	39.1	38.5
L60-1312	40.5	44.2	42.9	41.1	40.1	39.7
L61-1112	40.5	43.4	42.5	41.4	39.7	40.6
S9-2504	40.0	43.2	42.5	40.4	39.5	39.6

	Mean of 9 Tests	Percentage of Oil				
		*				
Ford	21.6	19.0	20.0	21.4	21.4	21.4
Shelby	22.1	20.0	20.7	21.5	22.0	22.3
Wayne	21.3	19.8	20.6	20.6	21.3	21.7
C1276	21.6	20.4	21.9	20.6	21.3	21.5
C1317-71	22.7	21.1	21.9	21.8	22.4	22.0
C1317-99	22.6	20.9	22.6	22.3	22.3	22.4
L60-1312	22.1	20.2	20.4	21.1	22.4	22.5
L61-1112	21.0	20.3	19.4	20.6	21.4	21.9
S9-2504	21.9	21.5	21.2	21.0	22.1	22.7

\*Not included in the mean.

<sup>1</sup>Irrigated.

Table 64. (Continued)

Strain	Urbana Ill.	Eldo- rado Ill.	Ames Iowa	Colum- bia Mo.	Man- hattan Kans.	Grand Junction Colo. <sup>1</sup>
						*
Ford	39.1	41.7	37.4	40.9	39.3	39.9
Shelby	38.1	41.8	37.0	40.5	38.9	41.5
Wayne	39.5	42.2	37.6	42.0	40.8	40.8
C1276	41.0	43.5	41.2	42.7	39.5	43.1
C1317-71	37.1	39.4	37.4	40.3	37.2	40.2
C1317-99	37.8	40.0	36.6	39.7	36.4	39.5
L60-1312	38.4	42.7	37.7	41.7	40.1	42.0
L61-1112	38.5	41.7	37.9	41.6	40.6	42.4
S9-2504	38.3	42.1	37.5	40.4	39.8	43.1

	Percentage of Oil					*
Ford	22.1	20.6	22.8	22.0	22.7	19.5
Shelby	22.4	21.4	23.8	21.8	22.9	19.5
Wayne	22.3	21.1	21.6	21.1	21.8	19.3
C1276	21.7	21.2	22.3	21.3	22.8	19.5
C1317-71	23.6	22.4	23.3	23.1	23.4	20.2
C1317-99	23.2	22.2	22.9	22.4	23.1	19.3
L60-1312	22.5	21.8	23.9	21.6	22.7	19.7
L61-1112	21.4	21.2	21.6	19.7	22.1	19.1
S9-2504	22.1	22.0	22.7	21.1	22.5	19.9

Table 65. Four-year summary of data for Uniform Test III, 1961-1964.

Strain	Yield	Rank	Maturity <sup>1</sup>	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	77	77	71	70	77	65	58	47	47
Ford	38.0	3	-1.1	2.1	41	2.2	16.7	40.9	21.2
Shelby	38.4	2	0	2.2	42	2.0	16.0	40.5	21.5
Wayne	42.0	1	+1.7	2.1	42	2.2	17.3	41.3	21.2

<sup>1</sup>Days earlier (-) or later (+) than Shelby which matured September 22, 122 days after planting.

Table 66. Four-year summary of yield and yield rank for Uniform Test III, 1961-1964.

Strain	Mean of 77 Tests	Freehold N.J. <sup>1</sup>	Newark Del.	Georgetown Del.	Hoytville Ohio	Wooster Ohio	Co-lumbus Ohio	Bluffton Ind.	Lafayette Ind.	Greenfield Ind.	Worthington Ind.	Evansville Ind.
Years Tested	1961-1964	1961-1964	1961-1964	1961-1964	1961-1964	1961-1964	1961-1964	1961-1964	1961-1964	1961-1964	1961-1964	1961-1964
Ford	38.0	32.2	38.7	27.6	34.3	28.5	39.4	40.8	42.7	36.9	43.1	38.5
Shelby	38.4	31.1	40.2	28.3	33.0	29.0	37.0	38.6	42.4	38.7	47.9	44.9
Wayne	42.0	35.6	38.5	31.7	36.0	35.2	39.4	45.2	48.1	43.3	52.9	45.4

	Yield Rank											
Ford	3	2	2	3	2	3	1	2	2	3	3	3
Shelby	2	3	1	2	3	2	3	3	3	2	2	2
Wayne	1	1	3	1	1	1	1	1	1	1	1	1

<sup>1</sup>Jamesburg, N. J., 1961.

<sup>2</sup>Irrigated.

Table 66. (Continued)

Strain	Ur- bana Ill.	Gi- rard Ill.	Edge- wood Ill.	Eldo- rado Ill.	Car- bon- dale Ill.	Ames Iowa	Ot- tum- wa Iowa	Co- lum- bia Mo.	Lin- coln Nebr.	Pow- hatan Kans.	Man- hatan Kans.	Man- hatan Kans. <sup>2</sup>	Grand Junc- tion Colo.
Years Tested	1961- 1964	1961- 1964	1961-1962 1964	1961- 1964	1961- 1964	1961- 1964	1961- 1964	1961- 1964	1961- 1963	1963- 1964	1961- 1964	1961- 1964	1963- 1964
Ford	43.3	41.3	38.9	42.0	28.6	39.0	42.2	33.7	49.4	22.2	35.1	37.7	25.9
Shelby	43.7	41.6	37.2	44.1	29.7	38.3	42.0	34.0	50.2	25.4	38.5	40.8	28.4
Wayne	47.3	46.7	42.7	49.2	30.9	41.0	46.5	38.1	49.5	25.1	42.9	46.3	25.1

Yield Rank

	3	3	2	3	3	2	2	3	3	3	3	3	2
Ford	3	3	2	3	3	2	2	3	3	3	3	3	2
Shelby	2	2	3	2	2	3	3	2	1	1	2	2	1
Wayne	1	1	1	1	1	1	1	1	2	2	1	1	3



UNIFORM PRELIMINARY TEST III - 1964

Strain	Originating Agency	Origin	Generation Composited
Shelby	Ill. A.E.S. & U.S.R.S.L.	Lincoln (2) x Richland	F <sub>8</sub>
Wayne (L57-2222)	Ill. A.E.S. & U.S.R.S.L.	L49-4091 x Clark	F <sub>5</sub>
A1-945	Iowa A.E.S. & U.S.R.S.L.	Lincoln x Harosoy	F <sub>8</sub>
A1-1349	Iowa A.E.S. & U.S.R.S.L.	Harosoy x Clark	F <sub>8</sub>
A2-5432	Iowa A.E.S. & U.S.R.S.L.	Clark x Chippewa	F <sub>7</sub>
AX172-29	Iowa A.E.S. & U.S.R.S.L.	Ford (3) x P.I. 232990	F <sub>3</sub>
C1336	Purdue A.E.S. & U.S.R.S.L.	Harosoy x C1069	F <sub>6</sub>
C1339	Purdue A.E.S. & U.S.R.S.L.	Harosoy x C1069	F <sub>6</sub>
K62-7201	Kansas A.E.S. & U.S.R.S.L.	C1069 x Chippewa	F <sub>7</sub>
L62-1161	Ill. A.E.S. & U.S.R.S.L.	Clark (4) x T117	F <sub>3</sub>
L62-1208	Ill. A.E.S. & U.S.R.S.L.	Clark (5) x T117	F <sub>3</sub>

Identification of Parent Strains

C1069	F <sub>7</sub> line from Lincoln x Ogden, from same F <sub>4</sub> line as Kent, in Uniform Test IV in 1954-58.
L49-4091	Pustule-resistant F <sub>4</sub> line from [F <sub>3</sub> Lincoln (2) x Richland] x (Lincoln x CNS), in Uniform Test IV in 1951 and III in 1952-53.
P.I. 232990	From Manchuria, "gracilis" type, stem canker resistant. Formerly designated T107.

Of the nine experimental strains, none had as high a mean yield as Wayne. However, A2-5432 was four days earlier, yielded only slightly less, and had good lodging resistance but short plant height. L62-1208 ranked third in mean yield, was the only strain with improved seed quality relative to the checks, but was rather late for Group III. It carries the gene Dt<sub>2</sub> for determinate main stem, transferred from T117 to a genetic background approaching that of Clark. The remaining strains did not perform better than either check variety over the region, although some did well at individual locations. AX172-29 had been selected as stem canker-resistant, but was severely attacked at Urbana with 45% of the plants infected, more than for any other strain, although the infection of Shelby was nearly as severe.

Table 67. Descriptive data for the strains in Uniform Preliminary Test III, 1964.

Strain	Flower Color	Pubes- cence Color	Pod Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Shattering*	
							George- town	Ur- bana
Shelby	P	T	Br	D	Y	B1	1.0	1.0
Wayne	W	T	Br	S	Y	B1	2.5	1.8
A1-945	P	G	Br	D	Y	G+Y	2.5	1.7
A1-1349	P	G	Br	D	Y	Y	1.0	2.0
A2-5432	P	T	Br	S	Y	B1	1.0	1.0
AX172-29	W	T	Br	S	Y	B1	1.0	1.2
C1336	P	G	Br	D	Y	G	3.5	1.0
C1339	P	G	Br	D	Y	G	5.0	2.5
K62-7201	P	T	Br	S	Y	B1	1.0	1.5
L62-1161	P	T	Br	D	Y	B1	1.3	1.0
L62-1208	P	T	Br	D	Y	B1	1.0	1.0

\*Average of 2 replications at Georgetown, Delaware, planted May 19 and 2 replications at Urbana, Illinois, planted May 6.

Table 68. Summary of data for Uniform Preliminary Test III, 1964.

Strain	Yield	Rank	Matu- rity <sup>1</sup>	Lodg- ing	Height	Seed Quality	Seed Weight	Seed Composition	
No. of Tests	12	12	12	11	12	11	8	Protein	Oil
								7	7
Shelby	33.7	6	0	1.5	40	2.0	15.2	39.3	22.2
Wayne	36.5	1	+2.4	1.7	40	2.2	16.8	41.0	21.3
A1-945	32.4	8	0	1.9	42	2.1	14.7	39.9	20.7
A1-1349	34.1	4	+1.5	1.6	41	2.1	16.9	40.8	20.9
A2-5432	35.0	2	-1.5	1.3	37	2.2	14.9	39.3	22.1
AX172-29	30.7	10	-2.3	1.7	39	2.4	16.8	39.7	21.8
C1336	34.1	4	-0.8	1.4	39	2.5	16.9	40.4	21.5
C1339	31.8	9	-0.8	1.3	38	2.5	17.7	40.9	21.8
K62-7201	33.0	7	+5.6	1.6	41	2.3	17.4	38.8	22.4
L62-1161	30.2	11	+4.3	1.5	39	2.1	15.0	39.6	21.7
L62-1208	34.3	3	+6.4	1.4	32	1.7	15.4	39.3	22.1

<sup>1</sup>Days earlier (-) or later (+) than Shelby which matured September 20, 123 days after planting.

Table 69. Disease data for Uniform Preliminary Test III, 1964.

Strain	Brown	Phytophthora	Frogeye		Downy	
	Stem Rot	Rot	Ind.		Mildew	
	<u>Ill.</u>	<u>Ind.</u>	<u>Race 1</u>	<u>Race 2</u>	<u>Ill.</u>	<u>Ind.</u>
	<u>n<sup>1</sup></u>	<u>a<sup>1</sup></u>	<u>a</u>	<u>a</u>	<u>n</u>	<u>n</u>
Shelby	3	S	R	4	3	3.0
Wayne	4	S	R	3	4	4.0
A1-945	4	S	-	5	3	3.0
A1-1349	4	S	-	5	3	3.0
A2-5432	4	S	-	5	5	4.0
AX172-29	3	S	-	5	3	4.5
C1336	4	S	R	1	1	1.5
C1339	4	S	R	1	1	2.0
K62-7201	4	S	-	1	3	3.5
L62-1161	3	S	-	4	3	3.5
L62-1208	4	S	-	4	3	1.5

<sup>1</sup>a = artificial inoculation; n = natural infection.



Table 70. Yield and yield rank for Uniform Preliminary Test III, 1964.

Strain	Mean of 12 Tests	George- town Del. <sup>1</sup>	Hoyt- ville Ohio	Woos- ter Ohio	Colum- bus Ohio	Lafa- yette Ind.	Worthing- ton Ind.	Urbana Ill.
				*				
Shelby	33.7	23.1	36.4	32.4	33.4	45.5	47.5	26.8
Wayne	36.5	26.1	35.4	36.9	26.5	45.9	52.7	32.1
A1-945	32.4	16.2	32.9	30.6	17.9	45.5	45.1	31.0
A1-1349	34.1	19.0	29.3	33.6	30.3	39.7	51.0	34.8
A2-5432	35.0	20.3	36.3	34.2	29.4	53.6	49.3	28.3
AX172-29	30.7	25.5	32.8	32.9	25.9	41.3	35.9	24.9
C1336	34.1	24.1	32.6	34.1	29.5	45.8	54.6	27.1
C1339	31.8	15.0	32.3	30.7	25.3	42.9	51.4	31.5
K62-7201	33.0	21.5	30.0	20.5	18.9	44.8	48.0	33.4
L62-1161	30.2	23.1	30.6	23.7	20.3	43.3	43.1	33.8
L62-1208	34.3	21.8	34.1	26.4	19.3	45.5	55.1	36.0
Coef. of Var. (%)		14.7	9.7	20.5	15.8	6.7	8.2	12.6
L.S.D. (5%)		N.S.	N.S.	N.S.	8.9	N.S.	8.8	N.S.
Row Spacing (In.)		36	28	32	28	38	38	40

	Yield Rank							
Shelby	6	4	1	6	1	4	8	10
Wayne	1	1	3	1	5	2	3	5
A1-945	8	10	5	8	11	4	9	7
A1-1349	4	9	11	4	2	11	5	2
A2-5432	2	8	2	2	4	1	6	8
AX172-29	10	2	6	5	6	10	11	11
C1336	4	3	7	3	3	3	2	9
C1339	9	11	8	7	7	9	4	6
K62-7201	7	7	10	11	10	7	7	4
L62-1161	11	4	9	10	8	8	10	3
L62-1208	3	6	4	9	9	4	1	1

\*Not included in the mean.

<sup>1</sup>Irrigated.

Table 70. (Continued)

Strain	Girard Ill.	Ames Iowa	Ottum- wa Iowa	Colum- bia Mo.	Pow- hattan Kans.	Man- hattan Kans.	Man- hattan Kans. <sup>1</sup>
Shelby	33.2	30.8	40.8	24.2	24.0	38.4	34.4
Wayne	41.4	38.0	44.2	29.9	25.0	41.1	39.7
A1-945	29.5	30.9	40.1	27.1	27.1	45.2	33.6
A1-1349	40.3	31.8	38.8	29.1	25.9	38.9	30.9
A2-5432	35.6	33.8	38.8	29.0	25.4	39.7	39.3
AX172-29	33.7	32.1	32.6	25.8	23.4	34.8	32.9
C1336	36.4	33.9	40.7	28.6	19.5	35.8	30.8
C1339	29.5	37.0	35.6	27.8	19.0	34.6	25.4
K62-7201	40.3	31.2	36.4	21.1	25.2	44.8	38.4
L62-1161	33.4	30.5	31.0	23.0	13.1	36.9	35.0
L62-1208	38.8	35.5	42.6	21.5	22.7	38.7	40.0
Coef. of Var. (%)	5.8	8.7	7.0	--	14.7	14.8	11.6
L.S.D. (5%)	4.6	6.5	6.0	--	N.S.	6.2	N.S.
Row Spacing (In.)	38	40	40	38	40	40	36

	Yield Rank						
Shelby	9	10	3	8	6	7	6
Wayne	1	1	1	1	5	3	2
A1-945	10	9	5	6	1	1	7
A1-1349	2	7	6	2	2	5	9
A2-5432	6	5	6	3	3	4	3
AX172-29	7	6	10	7	7	10	8
C1336	5	4	4	4	9	9	10
C1339	10	2	9	5	10	11	11
K62-7201	2	8	8	11	4	2	4
L62-1161	8	11	11	9	11	8	5
L62-1208	4	3	2	10	8	6	1

Table 71. Maturity, days earlier (-) or later (+) than Shelby, for Uniform Preliminary Test III, 1964.

Strain	Mean of 12 Tests	George- town Del. <sup>1</sup>	Hoyt- ville Ohio	Woos- ter Ohio	Colum- bus Ohio	Lafa- yette Ind.	Worthing- ton Ind.	Urbana Ill.
				*				
Shelby	0	0	0	0	0	0	0	0
Wayne	+2.4	0	0	+3	0	+11	+5	+ 2
A1-945	0	-2	+9	+3	+1	0	+2	- 1
A1-1349	+1.5	+2	0	0	0	+ 6	+7	+ 1
A2-5432	-1.5	-2	0	-6	-1	0	-3	- 3
AX172-29	-2.3	-6	0	+4	-1	+ 1	+3	- 5
C1336	-0.8	-2	0	+4	-2	0	+3	- 2
C1339	-0.8	-4	+9	+5	+3	- 1	+2	- 2
K62-7201	+5.6	+2	0	+1	+2	+14	+8	+10
L62-1161	+4.3	+4	+4	+3	+2	+10	+5	+ 4
L62-1208	+6.4	+4	+9	+6	+2	+12	+6	+11
Date planted	5-20	5-19	5-22	5-21	5-18	5-19	5-26	5-11
Shelby matured	9-20	9-15	9-28	9-28	9-28	9-22	9-21	9-13
Days to mature	123	119	129	130	133	126	118	125

\*Not included in the mean.

<sup>1</sup>Irrigated.

Table 71. (Continued)

Strain	Girard Ill.	Ames Iowa	Ottum- wa Iowa	Colum- bia Mo.	Pow- hattan Kans.	Man- hattan Kans.	Man- hattan Kans. <sup>1</sup>
							*
Shelby	0	0	0	0	0	0	0
Wayne	+ 4	+3	+ 2	+3	-2	+1	0
A1-945	- 4	+1	- 2	-2	-2	0	-4
A1-1349	- 2	+4	+ 3	-2	-2	+1	+3
A2-5432	- 2	0	- 2	-2	-2	-1	0
AX172-29	- 5	-3	- 6	-4	0	-1	-3
C1336	- 2	0	- 4	0	0	-1	-3
C1339	- 5	-2	- 5	-5	0	0	-3
K62-7201	+14	+8	+10	-5	+2	+2	+2
L62-1161	+ 2	+6	+ 6	+8	+1	0	0
L62-1208	+12	+6	+ 4	+4	+3	+4	+2
Date planted	5-21	5-15	5-16	5-4	6-4	6-2	6-28
Shelby matured	9-11	9-24	9-20	8-31	9-30	10-2	10-6
Days to mature	113	132	127	119	118	122	100

UNIFORM TEST IV - 1964

Strain	Originating Agency	Origin	Generation Compositd
Clark	Ill. A.E.S. & U.S.R.S.L.	Lincoln (2) x Richland	F <sub>8</sub>
Clark 63	Ill. and Mo. A.E.S. & U.S.R.S.L.	[Clark (4) x S54-1714] x [Clark (6) x Blackhawk]	13 F <sub>3</sub> lines
S3	Mo. A.E.S. & U.S.R.S.L.	[Clark 63 x L46-2132-A14 (2)] x [L49-4091 x Clark (7)]	F <sub>3</sub> lines
Kent	Purdue A.E.S. & U.S.R.S.L.	Lincoln x Ogden	F <sub>7</sub>
C1278	Purdue A.E.S. & U.S.R.S.L.	Clark x C1069	F <sub>6</sub>
C1282	Purdue A.E.S. & U.S.R.S.L.	Clark x C1069	F <sub>6</sub>
C1306	Purdue A.E.S. & U.S.R.S.L.	Clark x C1069	F <sub>6</sub>
C1311	Purdue A.E.S. & U.S.R.S.L.	Wabash x C1069	F <sub>6</sub>
L60-1385	Ill. A.E.S. & U.S.R.S.L.	L46-1503 x C985	F <sub>8</sub>
S62-4064	Mo. A.E.S. & U.S.R.S.L.	Clark (3) x L46-1503-4	F <sub>3</sub>

Identification of Parent Strains

C985	F <sub>4</sub> line from Lincoln x Ogden, progenitor of Kent, in Uniform Test IV in 1951-56.
C1069	F <sub>7</sub> line from C985, in Uniform Test IV in 1954-58.
L46-1503	F <sub>5</sub> line from Lincoln (2) x Richland, in Uniform Test III in 1949-50.
L46-2132-A14	Sel. from Lincoln (2) x Richland, sib of Clark and Shelby, in Uniform Test IV in 1956-57.
L49-4091	Pustule-resistant F <sub>4</sub> line from [F <sub>3</sub> Lincoln (2) x Richland] x (Lincoln x CNS), in Uniform Test IV in 1951 and III in 1952-53.
S54-1714	Pustule-resistant selection from L49-4091 x Clark, in Uniform Test IV in 1957.

Three-year means for the three check varieties are given in Tables 79-80. Clark 63 averaged .6 bushel below Clark and was slightly taller. Phytophthora rot was not known to have infected any of these plantings but some bacterial pustule probably occurred at most of the locations.

C1278 was the outstanding strain in the test, outyielding Kent slightly and maturing almost as early as Clark. Both C1282 and L60-1385 yielded surprisingly low this year after topping the 1963 test in yield.

None of the four new entries was particularly outstanding except that C1311 showed excellent lodging resistance along with a very tall plant. S3 is another Clark backcross carrying pustule and Phytophthora resistance but it yielded slightly less than Clark 63.

Table 72. Regional testing history and descriptive data for the strains in Uniform Test IV, 1964.

Strain	Years in Uniform Test IV	Previous Regional Test	Flower Color	Pubes- cence Color	Pod Color	Seed Coat Luster	Seed Coat Color	Hilum Color
Clark	14	None	P	T	Br	D	Y	B1
Clark 63	3	None	P	T	Br	D	Y	B1
S3	1	P.T. IV	W	T	Br	D+S	Y	B1
Kent	11	P.T. IV	P	T	Br	D	Y	B1
C1278	2	P.T. IV	P	T	Br	S	Y	B1
C1282	2	P.T. IV	P	T	Br	D	Y	B1
C1306	1	P.T. IV	P	T	Br	S	Y	B1
C1311	1	P.T. IV	W	G	Tan	S	Y	Bf
L60-1385	2	P.T. IV	P	G	Br	S	Y	Ib
S62-4064	1	P.T. IV	W	G	Br	S	Y	Y

Table 73. Summary of data for Uniform Test IV, 1964.

Strain	Yield	Rank	Matu- rity <sup>1</sup>	Lodg- ing	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	14	14	13	12	14	14	9	7	7
Clark	35.3	7	0	1.9	38	2.6	16.5	40.4	21.7
Clark 63	35.6	5	+0.4	2.0	40	2.7	16.1	39.9	21.8
S3	34.8	9	+0.5	2.1	39	2.6	16.2	39.9	21.8
Kent	37.9	2	+7.2	1.6	38	2.6	18.2	40.4	22.1
C1278	38.5	1	+2.0	1.6	39	2.6	18.0	40.4	21.9
C1282	35.0	8	+5.5	2.4	39	2.9	17.3	42.0	21.7
C1306	36.6	3	+2.4	2.1	39	2.8	17.7	40.5	22.4
C1311	35.5	6	+6.5	1.7	43	2.4	16.1	41.2	21.6
L60-1385	34.6	10	+6.5	1.8	40	3.3	19.7	41.3	22.4
S62-4064	36.5	4	+3.8	2.0	39	2.5	15.9	39.8	22.2

<sup>1</sup>Days earlier (-) or later (+) than Clark which matured September 25, 124 days after planting.

Table 74. Disease data for Uniform Test IV, 1964.

Strain	Bacterial Pustule		Brown Stem Rot	Phytophthora Rot	Frogeye		Downy Mildew	Chocolate Spot <sup>2</sup>	
	Ill. n <sup>1</sup>	Ia. a <sup>1</sup>			Ind.	Race 1 a			Race 2 a
Clark	3	2	4	S	R	5	3.3	3	
Clark 63	1	1	4	R	R	4	3.5	4	
S3	1	2	4	R	R	5	3.8	3	
Kent	3	3	4	S	R	1	1.0	3	
C1278	3	3	4	S	R	1	2.5	2	
C1282	2	3	3	S	R	5	2.3	3	
C1306	3	3	3	S	R	1	2.3	3	
C1311	3	3	4	S	R	1	4.0	2	
L60-1385	3	3	4	S	Seg.	4	1.0	3	
S62-4064	3	2	4	S	--	5	3.3	3	

<sup>1</sup>a = artificial inoculation; n = natural infection.

<sup>2</sup>A bacterial disease producing symptoms similar to those of brown spot. The organism is unnamed.



Table 75. Yield and yield rank for Uniform Test IV, 1964.

Strain	Mean of 14 Tests	Newark Del.	George- town Del. <sup>1</sup>	Upper Marlboro Md.	Colum- bus Ohio	Worthing- ton Ind.	Evans- ville Ind.	Edge- wood Ill.
					*			
Clark	35.3	37.9	22.7	25.1	30.2	54.2	37.8	34.3
Clark 63	35.6	36.2	22.4	29.0	29.6	45.7	38.8	35.1
S3	34.8	37.6	23.0	25.4	30.1	46.7	42.2	33.1
Kent	37.9	39.1	30.1	24.0	21.4	61.6	40.6	33.0
C1278	38.5	38.2	24.8	22.6	32.6	62.5	44.0	38.1
C1282	35.0	34.2	24.3	25.6	27.9	36.1	41.9	36.1
C1306	36.6	37.4	26.2	24.9	29.2	51.6	46.4	35.8
C1311	35.5	36.4	26.7	28.0	27.6	60.8	39.9	31.7
L60-1385	34.6	38.2	24.6	25.6	25.6	47.0	39.3	32.8
S62-4064	36.5	39.8	27.7	28.9	24.8	54.3	41.1	32.6
Coef. of Var. (%)		15.6	15.0	10.6	36.3	12.4	9.5	9.2
L.S.D. (5%)		N.S.	N.S.	4.0	N.S.	9.0	5.5	N.S.
Row Spacing (In.)		36	36	36	28	38	40	36

	Yield Rank							
Clark	7	5	9	7	2	5	10	5
Clark 63	5	9	10	1	4	9	9	4
S3	9	6	8	6	3	8	3	6
Kent	2	2	1	9	10	2	6	7
C1278	1	3	5	10	1	1	2	1
C1282	8	10	7	4	6	10	4	2
C1306	3	7	4	8	5	6	1	3
C1311	6	8	3	3	7	3	7	10
L60-1385	10	3	6	4	8	7	8	8
S62-4064	4	1	2	2	9	4	5	9

\*Not included in the mean.

<sup>1</sup>Irrigated.

Table 75. (Continued)

Strain	Eldo- rado Ill.	Carbon- dale Ill.	Miller City Ill.	Colum- bia Mo.	Portage- ville Mo. <sup>1</sup>	Pow- hattan Kans.	Man- hattan Kans.	Man- hattan Kans. <sup>1</sup>	Mound Valley Kans.
								*	
Clark	44.8	21.7	49.0	33.8	42.2	31.6	41.1	36.5	18.2
Clark 63	45.8	21.9	52.9	31.7	46.8	31.8	41.7	40.0	18.4
S3	44.2	21.3	46.5	29.1	45.4	31.8	43.7	39.7	17.3
Kent	49.1	25.3	53.3	30.8	46.2	37.5	42.4	38.2	17.0
C1278	51.9	23.2	55.8	31.3	51.0	35.9	42.1	39.9	17.7
C1282	44.6	23.0	54.9	29.5	41.9	34.3	44.6	39.5	18.3
C1306	48.3	25.1	53.8	31.1	37.4	36.5	39.6	39.5	17.7
C1311	40.7	26.8	52.7	26.8	37.8	34.0	38.2	38.6	16.4
L60-1385	45.0	23.4	52.2	29.2	43.8	30.4	38.3	35.5	14.7
S62-4064	47.0	25.5	53.5	30.6	41.9	32.4	39.3	35.7	16.4
C.V. (%)	6.5	--	5.2	--	9.7	6.5	9.0	13.5	14.0
L.S.D. (5%)	4.3	--	3.9	N.S.	6.1	3.2	N.S.	N.S.	3.5
Row Sp. (In.)	40	40	38	38	38	40	40	36	40

Yield Rank

Clark	7	9	9	1	6	9	6	8	3
Clark 63	5	8	6	2	2	7	5	1	1
S3	9	10	10	9	4	7	2	3	6
Kent	2	3	5	5	3	1	3	7	7
C1278	1	6	1	3	1	3	4	2	4
C1282	8	7	2	7	7	4	1	4	2
C1306	3	4	3	4	10	2	7	4	4
C1311	10	1	7	10	9	5	10	6	8
L60-1385	6	5	8	8	5	10	9	10	10
S62-4064	4	2	4	6	7	6	8	9	8

Table 76. Maturity, days earlier (-) or later (+) than Clark, and lodging for Uniform Test IV, 1964.

Strain	Mean of 13 Tests	Newark Del.	George- town Del. <sup>1</sup>	Upper Marlboro Md.	Colum- bus Ohio	Worthing- ton Ind.	Evans- ville Ind.	Edge- wood Ill.
					*			
Clark	0	0	0	0	0	0	0	0
Clark 63	+0.4	+ 2	+ 1	+1	0	0	0	-1
S3	+0.5	+ 2	+ 5	0	-1	0	0	-2
Kent	+7.2	+ 7	+12	+8	+5	+9	+8	+7
C1278	+2.0	+ 3	+ 4	+3	-1	+3	+5	-1
C1282	+5.5	+ 7	+12	+7	-1	+7	+8	+3
C1306	+2.4	+ 4	+ 5	+3	-2	+2	+4	+1
C1311	+6.5	+12	+14	+5	+4	+9	+8	+6
L60-1385	+6.5	+ 9	+14	+5	+3	+9	+8	+7
S62-4064	+3.8	+ 7	+12	+1	+2	+3	+6	0
Date planted	5-24	6-1	5-19	5-22	5-18	5-26	5-14	6-2
Clark matured	9-25	10-1	9-24	9-21	10-8	9-27	9-19	9-27
Days to mature	124	122	128	122	143	124	128	117
	Mean of 12 Tests				Lodging			
					*			
Clark	1.9	1.9	1.3	2.2	1.0	2.8	2.3	1.7
Clark 63	2.0	2.3	1.3	2.1	1.0	3.8	2.0	1.7
S3	2.1	2.4	1.6	2.1	1.0	3.5	2.0	1.6
Kent	1.6	2.0	1.5	1.8	1.0	1.5	1.8	1.3
C1278	1.6	2.0	1.4	1.9	1.0	2.0	1.8	1.4
C1282	2.4	3.4	1.6	2.0	1.0	4.3	3.3	1.9
C1306	2.1	2.4	1.4	2.1	1.0	3.3	2.0	1.5
C1311	1.7	1.8	1.5	1.6	1.0	1.8	2.0	1.6
L60-1385	1.8	1.9	1.4	1.9	1.0	3.0	2.0	1.6
S62-4064	2.0	1.9	1.5	2.1	1.0	2.5	2.3	1.9

\*Not included in the mean.

<sup>1</sup>Irrigated.

Table 76. (Continued)

Strain	Eldo- rado Ill.	Carbon- dale Ill.	Miller City Ill.	Colum- bia Mo.	Portage- ville Mo. <sup>1</sup>	Pow- hattan Kans.	Man- hattan Kans.	Man- hattan Kans. <sup>1</sup>	Mound Valley Kans.
Clark	0	0	0	0	0	0	0	*	*
Clark 63	-1	0	+1	0	+2	0	0	0	
S3	-1	+4	-1	-2	+1	+1	0	0	
Kent	+8	+6	+5	+8	+7	+4	+5	+4	
C1278	-2	+5	+1	+1	+2	+1	+1	+1	
C1282	+4	+6	+5	+4	+4	+2	+1	+2	
C1306	+1	+5	+2	0	+1	+2	+1	+1	
C1311	+9	+5	+4	+6	+3	+1	+3	+1	
L60-1385	+9	+6	+4	+6	+2	+2	+3	0	
S62-4064	0	+5	+5	+3	+2	+3	+2	0	
Date pltd.	6-4	5-25	5-15	5-4	5-18	6-4	6-2	6-28	5-18
Clark mat.	9-27	10-6	9-14	9-10	9-13	10-11	10-11	10-15	10-12
Da. to mat.	115	134	122	129	118	129	131	109	147

Lodging									
		*						*	*
Clark	2.3	1.0	2.7	1.6	1.8	1.2	1.5	1.4	1.0
Clark 63	2.1	1.0	2.2	1.4	2.0	1.2	1.6	1.8	1.0
S3	2.4	1.0	2.8	1.8	1.6	1.2	1.8	1.8	1.0
Kent	1.7	1.0	1.8	1.5	1.4	1.2	1.8	1.7	1.0
C1278	1.5	1.0	1.5	1.2	1.4	1.2	2.0	1.7	1.0
C1282	2.8	1.0	3.1	1.4	2.3	1.2	1.8	2.0	1.0
C1306	2.4	1.0	2.8	1.7	2.5	1.3	1.7	1.8	1.0
C1311	2.6	1.0	1.9	1.1	1.7	1.2	1.4	1.4	1.0
L60-1385	2.6	1.0	1.7	1.3	1.6	1.2	1.7	1.7	1.0
S62-4064	2.2	1.0	2.5	1.7	1.9	1.5	1.4	1.7	1.0

Table 77. Plant height and seed quality for Uniform Test IV, 1964.

Strain	Mean of 14 Tests	Newark Del.	George- town Del. <sup>1</sup>	Upper Marlboro Md.	Colum- bus Ohio	Worthing- ton Ind.	Evans- ville Ind.	Edge- wood Ill.
					*			
Clark	38	38	28	39	39	46	50	40
Clark 63	40	40	34	42	40	47	51	41
S3	39	39	34	42	41	45	52	41
Kent	38	40	33	40	39	46	48	38
C1278	39	40	32	38	40	48	51	39
C1282	39	37	32	42	41	42	51	40
C1306	39	38	33	41	40	44	51	39
C1311	43	42	37	47	42	53	53	43
L60-1385	40	38	33	41	43	48	52	43
S62-4064	39	39	36	38	42	49	50	40

	Mean of 14 Tests	Seed Quality						
					*			
Clark	2.6	2.1	3.0	3.0	2.0	2.0	4.0	1.6
Clark 63	2.7	2.1	2.9	3.0	1.0	2.5	4.0	1.9
S3	2.6	2.1	3.1	3.0	2.0	2.0	4.0	2.1
Kent	2.6	2.0	2.9	4.0	2.5	2.0	3.5	2.6
C1278	2.6	2.1	2.4	4.0	2.7	1.5	4.0	1.6
C1282	2.9	2.5	3.6	3.0	2.2	2.0	4.0	3.1
C1306	2.8	2.5	2.3	3.5	2.5	1.5	4.0	2.6
C1311	2.4	2.4	3.5	3.8	2.0	2.0	3.5	2.0
L60-1385	3.3	3.3	4.4	4.0	2.2	2.5	4.0	4.0
S62-4064	2.5	2.5	2.5	3.0	1.5	1.5	3.5	1.9

\*Not included in the mean.

<sup>1</sup>Irrigated.

Table 77. (Continued)

Strain	Eldo- rado Ill.	Carbon- dale Ill.	Miller City Ill.	Colum- bia Mo.	Portage- ville Mo.	Pow- hattan Kans.	Man- hattan Kans.	Man- hattan Kans. <sup>1</sup>	Mound Valley Kans.
Clark	45	29	47	43	49	26	34	*	23
Clark 63	45	31	47	43	49	27	35	35	23
S3	45	30	47	42	47	28	35	35	23
Kent	43	30	47	41	45	27	34	36	22
Cl278	46	31	48	41	49	26	35	34	21
Cl282	44	32	47	41	49	27	35	35	23
Cl306	45	30	48	40	47	26	35	35	22
Cl311	50	34	53	44	52	27	39	37	22
L60-1385	48	34	48	44	49	28	34	32	23
S62-4064	46	32	46	41	49	27	36	33	21

Seed Quality									
Clark	4.5	3.0	3.6	2.0	2.3	1.2	1.1	*	3.0
Clark 63	4.4	3.0	3.6	2.0	2.3	1.2	1.2	1.2	3.0
S3	4.3	2.0	3.8	2.0	2.3	1.1	1.2	1.2	3.0
Kent	4.3	3.0	3.1	2.0	2.2	1.1	1.3	1.3	3.0
Cl278	4.8	3.0	3.4	2.0	2.0	1.2	1.1	1.3	3.0
Cl282	5.0	4.0	3.4	2.0	2.1	1.2	1.2	1.2	3.0
Cl306	4.6	4.0	3.8	2.0	2.2	1.2	1.1	1.3	4.0
Cl311	3.5	2.0	2.3	1.5	1.5	1.2	1.2	1.1	3.0
L60-1385	5.0	4.0	3.9	2.0	2.5	1.6	1.1	1.3	4.0
S62-4064	4.0	4.0	2.9	1.5	1.7	1.1	1.2	1.2	3.0

Table 78. Percentages of protein and oil for Uniform Test IV, 1964.

Strain	Mean of 7 Tests	George- town Del. <sup>1</sup>	Colum- bus Ohio	Evans- ville Ind.	Eldo- rado Ill.	Miller City Ill.	Colum- bia Mo.	Pow- hattan Kans.	Man- hattan Kans.
			*						
Clark	40.4	42.2	40.1	40.3	42.0	40.6	40.4	39.9	37.3
Clark 63	39.9	41.8	39.6	39.7	41.5	40.0	39.8	39.4	37.0
S3	39.9	41.7	40.1	38.9	41.9	39.8	40.3	39.3	37.1
Kent	40.4	42.5	40.2	39.7	42.2	40.6	39.8	40.2	38.1
C1278	40.4	42.0	40.5	39.5	41.2	40.5	40.4	41.6	37.3
C1282	42.0	43.4	41.6	41.4	43.3	41.9	42.0	43.0	39.1
C1306	40.5	42.2	42.0	39.6	41.8	40.9	40.2	41.2	37.7
C1311	41.2	43.4	40.5	40.1	43.3	41.3	41.4	41.0	37.9
L60-1385	41.3	43.5	40.6	39.8	43.3	41.1	41.6	42.0	37.9
S62-4064	39.8	42.6	39.8	39.8	41.5	39.7	39.2	39.3	36.7

	Mean of 7 Tests	Percentage of Oil							
			*						
Clark	21.7	20.9	20.4	22.5	20.9	23.3	21.3	20.9	22.1
Clark 63	21.8	20.2	21.5	21.5	21.7	23.1	21.7	21.2	22.9
S3	21.8	20.3	21.0	22.5	21.4	23.3	21.3	21.2	22.7
Kent	22.1	21.1	21.0	23.3	21.3	22.5	21.9	21.6	22.7
C1278	21.9	20.6	21.3	22.5	21.4	22.6	21.3	21.0	23.0
C1282	21.7	21.8	20.6	22.2	20.7	22.7	20.8	20.7	22.8
C1306	22.4	21.6	21.4	23.1	21.9	23.5	21.6	21.5	23.6
C1311	21.6	21.3	20.8	22.7	20.6	22.2	21.3	20.9	22.0
L60-1385	22.4	22.5	22.1	23.7	21.7	23.2	21.9	20.1	23.7
S62-4064	22.2	20.9	21.3	22.7	21.9	23.3	22.1	21.5	22.8

\*Not included in the mean.

<sup>1</sup>Irrigated.





Table 79. Three-year summary of data for Uniform Test IV, 1962-1964.

Strain	Yield	Rank	Matu- rity <sup>1</sup>	Lodg- ing	Height	Seed Quality	Seed Weight	Seed Composition	
No. of Tests	38	38	37	34	38	36	25	Protein	Oil
								22	22
Clark	37.5	2	0	1.9	38	2.4	16.6	40.7	21.4
Clark 63	36.9	3	+0.3	2.0	40	2.5	15.9	40.4	21.4
Kent	38.9	1	+7.5	1.7	38	2.6	17.8	40.8	21.6

<sup>1</sup>Days earlier (-) or later (+) than Clark which matured September 25, 124 days after planting.

Table 80. Three-year summary of yield and yield rank for Uniform Test IV, 1962-1964.

Strain	Mean of 38 Tests	New- ark Del.	George- town Del.	Colum- bus Ohio	Worthing- ton Ind.	Evans- ville Ind.	Edge- wood Ill.	Eldo- rado Ill.
Years Tested		1963- 1964	1962- 1964	1962- 1964	1962- 1964	1963- 1964	1962- 1964	1962- 1964
Clark	37.5	45.7	22.9	36.4	48.5	43.6	37.7	48.4
Clark 63	36.9	44.8	21.2	33.7	44.7	42.1	40.9	46.7
Kent	38.9	45.3	28.6	31.2	52.3	44.3	36.5	48.2

Yield Rank								
Clark	2	1	2	1	2	2	2	1
Clark 63	3	3	3	2	3	3	1	3
Kent	1	2	1	3	1	1	3	2

<sup>1</sup>Irrigated.

Table 80. (Continued)

Strain	Carbon- dale Ill.	Miller City Ill.	Colum- bia Mo.	Portage- ville Mo.	Pow- hattan Kans.	Man- hattan Kans.	Man- hattan Kans. <sup>1</sup>	Mound Valley Kans.	Colum- bus Kans.
Years Tested	1962- 1964	1962- 1964	1962- 1964	1962- 1964	1963- 1964	1962- 1964	1962- 1964	1962- 1964	1962- 1963
Clark	29.5	44.1	36.0	42.1	31.1	39.9	43.4	17.0	16.3
Clark 63	29.0	46.4	34.0	45.4	31.6	40.2	47.9	17.6	15.2
Kent	31.3	46.4	35.1	48.8	37.7	44.5	46.5	18.5	14.8

	Yield Rank								
Clark	2	3	1	3	3	3	3	3	1
Clark 63	3	1	3	2	2	2	1	2	2
Kent	1	1	2	1	1	1	2	1	3



UNIFORM PRELIMINARY TEST IV - 1964

Strain	Originating Agency	Origin	Generation Compositd
Clark	Ill. A.E.S. & U.S.R.S.L.	Lincoln (2) x Richland	F <sub>8</sub>
Clark 63	Ill. and Mo. A.E.S. & U.S.R.S.L.	[Clark (4) x S54-1714] x [Clark (6) x Blackhawk]	13 F <sub>3</sub> lines
SL1-1	Ill. and Mo. A.E.S. & U.S.R.S.L.	Same as Clark 63	6 F <sub>3</sub> lines
Kent	Purdue A.E.S. & U.S.R.S.L.	Lincoln x Ogden	F <sub>7</sub>
D60-5702	Delta Br. E.S. & U.S.R.S.L.	Hill x D53-354	F <sub>5</sub>
D60-5764	Delta Br. E.S. & U.S.R.S.L.	Hill x D53-354	F <sub>5</sub>
D62-6225	Delta Br. E.S. & U.S.R.S.L.	Hill x Sioux	F <sub>5</sub>
K720	Kansas A.E.S. & U.S.R.S.L.	Unknown, records destroyed by fire	
K62-7221	Kansas A.E.S. & U.S.R.S.L.	C1069 x Clark	F <sub>7</sub>
L62-1251	Ill. A.E.S. & U.S.R.S.L.	Clark (6) x T117	F <sub>3</sub>
L62-1579	Ill. A.E.S. & U.S.R.S.L.	Clark (6) x T204	F <sub>3</sub>
S4	Mo. A.E.S. & U.S.R.S.L.	S3 x [S62-4064 x (Clark (3) x Kanrich)]	F <sub>3</sub> lines
S62-4067	Mo. A.E.S. & U.S.R.S.L.	[Clark 63 x L46-2132-A14 (2)] x [L49-4091 x Clark (7)]	F <sub>3</sub>
S62-4068	Mo. A.E.S. & U.S.R.S.L.	Same as above	F <sub>3</sub>
S62-4076	Mo. A.E.S. & U.S.R.S.L.	Same as above	F <sub>3</sub>
S62-4087	Mo. A.E.S. & U.S.R.S.L.	Same as above	F <sub>3</sub>
S62-4098	Mo. A.E.S. & U.S.R.S.L.	Same as above	F <sub>3</sub>
S62-4100	Mo. A.E.S. & U.S.R.S.L.	Same as above	F <sub>3</sub>
S62-4104	Mo. A.E.S. & U.S.R.S.L.	Same as above	F <sub>3</sub>
S63-3607	Mo. A.E.S. & U.S.R.S.L.	S62-4064 x [Clark (3) x Kanrich]	F <sub>3</sub>

Identification of Parent Strains

C1069	F <sub>7</sub> line from Lincoln x Ogden, from same F <sub>4</sub> line as Kent, in Uniform Test IV in 1951-56.
D53-354	Sel. from D49-2525 x L46-5679, in Uniform Test IV in 1957-58. D49-2525 is a pustule-resistant selection from S100 x CNS and a sib of Lee. L46-5679 is a selection from Lincoln x Richland.
L46-2132-A14	Sel. from Lincoln (2) x Richland, sib of Clark and Shelby, in Uniform Test IV in 1956-57.
L49-4091	Pustule-resistant F <sub>4</sub> line from [F <sub>3</sub> Lincoln (2) x Richland] x (Lincoln x CNS), in Uniform Test IV in 1951 and III in 1952-53.
S3	In Uniform Test IV.
S54-1714	Pustule-resistant selection from L49-4091 x Clark, in Uniform Test IV in 1957.
S62-4064	In Uniform Test IV.

SL1-1 is a composite of the six highest yielding lines of Clark 63 as tested in Missouri over the past several years. However, in this test there was no yield advantage for SL1-1 over Clark 63. The two strains performed very similarly but SL1-1 was slightly later at several locations.

The three D strains did not yield as well as the checks; however, D62-6225 did not have a fair test since stands were very poor at some locations. The two K strains yielded very well but probably should be classified as Group V maturity since they were several days later than Kent at most locations.

The two L strains are closely related to Clark but L62-1251 carries a gene (na) for narrow leaf and high number of seeds per pod and L62-1579 carries a gene (Dt<sub>2</sub>) for determinate stem, making the plant height several inches less. Both strains were otherwise similar to Clark in appearance and performance but did not quite come up to Clark in average yield.

S4 is similar to Clark 63 except that in addition to pustule and Phytophthora resistance (there is some conflicting evidence on the Phytophthora resistance) it carries a dominant gene from Kanrich for downy mildew resistance. In this test it performed much like Clark 63 except that it averaged slightly later in maturity.

S63-3607 is a related Clark backcross with downy mildew resistance combined with white flowers (w) and gray pubescence (t) giving a buff hilum color. It was also similar to Clark but later.

The remaining seven S strains are isolines selected to compare the effects of pustule and Phytophthora resistance. The first two (S62-4067 and -4068) are from the same F<sub>2</sub> plant and the remaining five are likewise from a single F<sub>2</sub> plant. S62-4087 had narrow leaves and purple flowers and is apparently of extraneous origin. Among the other six lines, four carry the Phytophthora resistance gene and ranged from 37.1 to 37.7 in mean yield whereas the two susceptible lines averaged 41.0 and 41.2 bushels. While not conclusive, these data suggest that the Phytophthora resistance gene or genes linked to it have a depressing effect on yield in the absence of the disease. No effect of the pustule resistance gene was apparent in these data.

Table 81. Descriptive data for the strains in Uniform Preliminary Test IV, 1964.

Strain	Flower Color	Pubes- cence Color	Pod Color	Seed Coat Luster	Seed Coat Color	Hilum Color
Clark	P	T	Br	D	Y	B1
Clark 63	P	T	Br	D	Y	B1
SL1-1	P	T	Br	D	Y	B1
Kent	P	T	Br	D	Y	B1
D60-5702	W	G	Br	S	Y	Bf
D60-5764	P	G	Tan	S	Y	Ib
D62-6225	W	T	Tan	S	Y	G+B1+Tan
K720	P	T	Br	D	Y	B1
K62-7221	P	T	Br	D	Y	B1
L62-1251	P	T	Br	D	Y	B1
L62-1579	P	T	Br	D	Y	B1
S4	W	T	Br	S	Y	G+B1
S62-4067	W	T	Br	S	Y	B1
S62-4068	W	T	Br	D	Y	B1
S62-4076	W	T	Br	S	Y	B1
S62-4087	P	T	Br	D	Y	B1
S62-4098	W	T	Br	D	Y	B1
S62-4100	W	T	Br	D	Y	B1
S62-4104	W	T	Br	D	Y	B1
S63-3607	W	G	Br	D	Y	Bf

Table 82. Summary of data for Uniform Preliminary Test IV, 1964.

Strain	Yield	Rank	Matu- rity <sup>1</sup>	Lodg- ing	Height	Seed Quality	Seed Weight	Seed Composition	
No. of Tests	9	9	8	9	9	9	7	Protein	Oil
								3	3
Clark	40.6	6	0	1.9	42	2.7	17.1	39.1	22.5
Clark 63	39.5	8	+ 0.5	2.0	43	2.6	16.2	38.9	22.8
SL1-1	39.3	9	+ 1.6	2.0	43	2.6	16.2	38.9	22.7
Kent	43.9	1	+ 6.9	1.6	40	2.7	18.2	39.0	22.9
D60-5702	37.9	13	+ 7.9	1.9	44	2.2	14.4	38.7	22.4
D60-5764	37.2	17	+ 8.8	1.8	45	2.8	14.8	38.5	22.2
D62-6225	27.5	20	+ 9.9	1.9	31	2.5	15.5	44.0	17.4
K720	42.8	2	+11.0	2.2	43	2.4	17.9	40.0	21.9
K62-7221	41.3	3	+12.6	2.0	43	2.4	16.3	39.9	22.1
L62-1251	38.6	12	- 0.8	2.0	34	2.7	15.9	38.5	22.9
L62-1579	39.0	10	0	1.8	40	2.5	15.6	38.5	22.6
S4	39.9	7	+ 2.0	1.9	42	2.8	16.2	38.8	22.9
S62-4067	37.6	15	+ 1.3	1.9	42	2.7	16.4	38.7	22.4
S62-4068	37.7	14	+ 0.6	2.0	41	2.5	16.4	39.3	22.5
S62-4076	41.0	5	+ 1.3	1.8	41	2.6	16.6	39.2	22.6
S62-4087	35.2	19	- 1.0	2.1	40	2.4	15.5	38.8	22.8
S62-4098	41.2	4	+ 2.3	1.9	41	2.8	16.5	38.4	22.9
S62-4100	37.5	16	+ 1.1	1.9	42	2.6	16.6	39.1	22.6
S62-4104	37.1	18	+ 2.0	2.1	42	2.4	16.5	38.6	22.7
S63-3607	39.0	10	+ 4.4	2.0	42	2.8	16.3	39.4	22.4

<sup>1</sup>Days earlier (-) or later (+) than Clark which matured September 26, 124 days after planting.

Table 83. Disease data for Uniform Preliminary Test IV, 1964.

Strain	Bacterial	Brown	Phytophthora		Frogeye		Downy
	Pustule	Stem Rot	Rot		Ind.		Mildew
	<u>Mo.</u> <u>a<sup>1</sup></u>	<u>Ill.</u> <u>n<sup>1</sup></u>	<u>Ind.</u> <u>a</u>	<u>Mo.</u> <u>a</u>	<u>Race 1</u> <u>a</u>	<u>Race 2</u> <u>a</u>	<u>Ind.</u> <u>n</u>
Clark	S	4	S	S	R	5	3.3
Clark 63	R	4	R	R	R	4	3.5
SL1-1	R	4	R	R	R	5	3.0
Kent	-	4	S	-	R	1	1.0
D60-5702	-	4	S	-	-	3	1.0
D60-5764	-	4	S	-	-	4	3.0
D62-6225	-	4	S	-	-	2	1.0
K720	-	4	S	-	-	4	1.0
K62-7221	-	4	S	-	-	5	3.0
L62-1251	-	4	S	-	-	5	1.0
L62-1579	-	4	S	-	-	5	2.5
S4	R	4	S	R	-	5	1.0
S62-4067	R	4	R	R	-	5	3.5
S62-4068	S	4	R	R	-	4	4.0
S62-4076	R	4	S	S	-	4	3.0
S62-4087	S	4	S	S	-	5	2.5
S62-4098	R	4	S	S	-	4	4.0
S62-4100	R	4	R	R	-	4	3.5
S62-4104	S	4	R	R	-	4	4.5
S63-3607	-	4	Seg.	-	-	4	1.0

<sup>1</sup>a = artificial inoculation; n = natural infection.



Table 84. Yield for Uniform Preliminary Test IV, 1964.

Strain	Mean of 9 Tests	George- town Del. <sup>1</sup>	Upper Marlboro Md.	Worthing- ton Ind.	Evans- ville Ind.	Eldo- rado Ill.
		*				
Clark	40.6	25.1	29.8	49.9	39.6	48.7
Clark 63	39.5	27.5	29.2	46.1	44.4	40.8
SL1-1	39.3	23.9	30.1	45.1	39.8	47.7
Kent	43.9	29.9	26.3	61.1	46.1	48.5
D60-5702	37.9	30.4	25.9	43.2	38.5	35.3
D60-5764	37.2	23.3	20.8	44.0	38.2	38.4
D62-6225	27.5	19.2	22.6	26.2	27.1	22.7
K720	42.8	28.7	22.2	57.4	40.5	57.3
K62-7221	41.3	25.2	29.0	48.2	43.8	46.4
L62-1251	38.6	26.3	27.5	46.0	47.3	43.7
L62-1579	39.0	27.6	26.0	48.6	42.0	43.6
S4	39.9	27.5	24.6	60.7	42.0	44.7
S62-4067	37.6	26.3	25.4	42.5	44.9	45.6
S62-4068	37.7	30.0	29.4	41.8	41.9	43.5
S62-4076	41.0	25.8	25.7	58.7	44.1	46.6
S62-4087	35.2	26.0	22.0	43.4	40.4	42.6
S62-4098	41.2	25.4	24.6	54.3	40.6	47.7
S62-4100	37.5	23.5	28.0	47.8	44.3	43.6
S62-4104	37.1	28.2	25.8	46.4	35.2	42.1
S63-3607	39.0	25.3	27.6	48.0	35.4	43.8
Coef. of Var. (%)		20.7	16.2	12.0	10.5	9.7
L.S.D. (5%)		N.S.	N.S.	12.1	9.0	N.S.
Row Spacing (In.)		36	36	38	40	40

\*Not included in the mean.

<sup>1</sup>Irrigated.

Table 84. (Continued)

Strain	Carbon- dale Ill.	Miller City Ill.	Portage- ville Mo. <sup>1</sup>	Pow- hattan Kans.	Man- hattan Kans.	Man- hattan Kans. <sup>1</sup>
						*
Clark	29.9	45.3	56.6	30.8	35.2	37.3
Clark 63	29.0	50.3	49.3	30.0	36.5	42.3
SL1-1	28.1	51.7	44.7	28.4	38.2	33.2
Kent	26.4	58.5	44.8	37.7	45.5	38.9
D60-5702	26.1	58.1	43.4	33.9	36.8	32.3
D60-5764	25.4	58.6	43.0	32.5	34.3	35.6
D62-6225	21.4	35.5	36.4	28.5	27.0	34.9
K720	31.0	58.1	46.3	34.6	37.8	42.0
K62-7221	27.9	57.7	45.2	33.4	39.8	30.7
L62-1251	26.0	50.4	42.3	28.8	35.1	31.4
L62-1579	24.5	54.6	43.5	31.4	36.8	40.0
S4	21.8	51.4	44.7	30.3	38.5	39.3
S62-4067	26.1	51.0	43.5	24.5	34.9	38.3
S62-4068	25.2	53.2	43.3	26.4	35.0	34.6
S62-4076	26.3	56.0	47.3	26.4	37.9	41.7
S62-4087	26.8	48.2	37.5	24.5	31.2	33.1
S62-4098	27.7	58.2	44.1	34.0	39.6	35.8
S62-4100	21.3	50.2	40.2	25.0	37.3	40.2
S62-4104	25.2	52.6	38.1	33.4	34.9	38.1
S63-3607	28.0	53.8	45.0	32.5	36.8	36.6
Coef. of Var. (%)	--	8.7	11.6	13.0	11.3	11.0
L.S.D. (5%)	--	9.6	N.S.	N.S.	N.S.	N.S.
Row Spacing (In.)	40	38	38	40	40	36

Table 85. Yield rank for Uniform Preliminary Test IV, 1964.

Strain	Mean of 9 Tests	George- town Del. <sup>1</sup>	Upper Marlboro Md.	Worthing- ton Ind.	Evans- ville Ind.	Eldo- rado Ill.
Clark	6	16	2	6	15	2
Clark 63	8	7	4	12	4	17
SL1-1	9	17	1	14	14	4
Kent	1	3	9	1	2	3
D60-5702	13	1	11	17	16	19
D60-5764	17	19	20	15	17	18
D62-6225	20	20	17	20	20	20
K720	2	4	18	4	12	1
K62-7221	3	15	5	8	7	7
L62-1251	12	9	8	13	1	11
L62-1579	10	6	10	7	8	12
S4	7	7	15	2	8	9
S62-4067	15	9	14	18	3	8
S62-4068	14	2	3	19	10	14
S62-4076	5	12	13	3	6	6
S62-4087	19	11	19	16	13	15
S62-4098	4	13	15	5	11	4
S62-4100	16	18	6	10	5	12
S62-4104	18	5	12	11	19	16
S63-3607	10	14	7	9	18	10

<sup>1</sup>Irrigated.

Table 85. (Continued)

Strain	Carbon- dale Ill.	Miller City Ill.	Portage- ville Mo. <sup>1</sup>	Pow- hattan Kans.	Man- hattan Kans.	Man- hattan Kans. <sup>1</sup>
Clark	2	19	1	10	13	10
Clark 63	3	16	2	12	12	1
SL1-1	4	12	8	15	5	16
Kent	9	2	7	1	1	7
D60-5702	11	4	13	4	9	18
D60-5764	14	1	15	7	18	13
D62-6225	19	20	20	14	20	14
K720	1	4	4	2	7	2
K62-7221	6	6	5	5	2	20
L62-1251	13	15	16	13	14	19
L62-1579	17	8	11	9	9	5
S4	18	13	8	11	4	6
S62-4067	11	14	11	19	16	8
S62-4068	15	10	14	16	15	15
S62-4076	10	7	3	16	6	3
S62-4087	8	18	19	19	19	17
S62-4098	7	3	10	3	3	12
S62-4100	20	17	17	18	8	4
S62-4104	15	11	18	5	16	9
S63-3607	5	9	6	7	9	11

Table 86. Maturity, days earlier (-) or later (+) than Clark, for Uniform Preliminary Test IV, 1964.

Strain	Mean of 8 Tests	George- town Del. <sup>1</sup>	Upper Marlboro Md.	Worthing- ton Ind.	Evans- ville Ind.	Eldo- rado Ill.
		*				
Clark	0	0	0	0	0	0
Clark 63	+ 0.5	0	0	0	0	+ 1
SL1-1	+ 1.6	0	0	+ 2	+ 3	+ 2
Kent	+ 6.9	+ 8	+11	+10	+ 7	+ 5
D60-5702	+ 7.9	+ 8	+ 9	+13	+ 8	+10
D60-5764	+ 8.8	+16	+13	+16	+ 9	+ 9
D62-6225	+ 9.9	+15	+15	+18	+12	+10
K720	+11.0	+10	+13	+15	+10	+14
K62-7221	+12.6	+16	+19	+17	+10	+15
L62-1251	- 0.8	0	- 3	+ 2	+ 1	+ 2
L62-1579	0	- 2	- 5	+ 1	+ 1	+ 1
S4	+ 2.0	+ 4	- 2	+ 2	+ 4	+ 3
S62-4067	+ 1.3	+ 3	+ 1	+ 1	+ 2	+ 1
S62-4068	+ 0.6	+ 1	- 2	+ 1	+ 2	+ 1
S62-4076	+ 1.3	0	+ 2	+ 1	+ 2	+ 1
S62-4087	- 1.0	+ 3	- 5	0	+ 2	- 1
S62-4098	+ 2.3	0	+ 3	+ 1	+ 4	+ 3
S62-4100	+ 1.1	0	+ 3	+ 2	+ 2	0
S62-4104	+ 2.0	+ 1	+ 4	+ 2	+ 4	+ 2
S63-3607	+ 4.4	+12	+ 5	+ 6	+ 8	+ 4
Date planted	5-25	5-19	5-22	5-26	5-14	6-4
Clark matured	9-26	9-25	9-24	9-26	9-20	9-26
Days to mature	124	129	125	123	129	114

\*Not included in the mean.

<sup>1</sup>Irrigated.

Table 86. (Continued)

Strain	Carbon- dale Ill.	Miller City Ill.	Portage- ville Mo. <sup>1</sup>	Pow- hattan Kans.	Man- hattan Kans.	Man- hattan Kans. <sup>1</sup>
	*					*
Clark	0	0	0	0	0	0
Clark 63	0	+ 1	+ 2	0	0	0
SL1-1	0	+ 2	+ 4	0	0	0
Kent	+6	+ 5	+ 8	+5	+4	+4
D60-5702	+6	+ 8	+11	+2	+2	0
D60-5764	+5	+ 9	+ 9	+2	+3	0
D62-6225	-3	+ 9	+ 8	+4	+3	+2
K720	+2	+15	+12	+5	+4	+5
K62-7221	+4	+16	+14	+5	+5	+5
L62-1251	-5	- 3	- 5	+1	-1	0
L62-1579	-7	+ 1	0	+1	0	+1
S4	-5	+ 2	+ 4	+2	+1	+1
S62-4067	-5	+ 1	+ 3	+1	0	0
S62-4068	-4	+ 1	+ 1	+1	0	+1
S62-4076	-7	+ 1	+ 2	+1	0	+1
S62-4087	-8	0	- 3	0	-1	0
S62-4098	0	+ 2	+ 4	+1	0	+1
S62-4100	-5	+ 1	+ 1	+1	-1	+1
S62-4104	0	+ 2	+ 2	+1	-1	+1
S63-3607	+3	+ 4	+ 5	+1	+2	0
Date planted	5-25	5-15	5-18	6-4	6-2	6-28
Clark matured	10-4	9-14	9-13	10-12	10-11	10-15
Days to mature	132	122	118	130	131	109

SOYBEAN DISEASE INVESTIGATIONS IN 1964

Data for this and other sections of the Report were furnished by:

K. L. Athow, Indiana      D. W. Chamberlain, Illinois      J. M. Dunleavy, Iowa

Disease survey data are listed in the following table for each state in which a disease survey was made. The disease data are calculated as follows: severity index is determined on a 1 (no disease) to 5 (very severe infection) basis; prevalence index is based on the percent of the field infected on a 1 (1-25%), 2 (26-50%), 3 (51-75%), and 4 (76-100%) basis. The disease index = percent of fields showing infection x average severity x average prevalence. Averages are based on infected fields only.

Four diseases, namely, Phytophthora rot, stem canker, purple stain, and pod and stem blight are rated in a separate category because of either their destructive potential or their effect on the value of the seed. The severity classes for these diseases are determined as follows: 1 (no diseased plants in the field or no diseased seed in the sample); 2 (1-3% of the plants or the seed diseased); 3 (4-8% of the plants or seed diseased); 4 (9-19% of the plants or seed diseased); and 5 (20-100% of the plants or seed diseased). Prevalence rating is determined by the same method for all diseases.

SUMMARY OF DISEASE SURVEY DATA - 1964

Disease	Percent of Fields Infected		Average Severity	Average Prevalence	Disease Index
<u>Illinois</u> , August 10-13					
Bacterial Blight	39	+10*	2.2	3.3	2.8
Bacterial Pustule	35	+17*	2.3	3.2	2.5
Downy Mildew	35	+10*	2.2	3.0	2.3
Brown Stem Rot	27	+ 1*	2.3	2.0	1.2
Brown Spot	20	+20*	2.0	2.9	1.2
Phytophthora Rot	7		--	trace	--
Yellow Mosaic	7		--	trace	--
Stem Canker	3		--	trace	--
Wildfire	1		--	trace	--

Iowa, July 9-10 and September 10-11

Bacterial Blight	82	2.4	2.2	4.3
Root Rot	69	2.4	2.8	4.6
Bacterial Pustule	56	2.7	2.9	4.4
Brown Stem Rot	53	3.1	2.6	4.3
Septoria	48	2.4	2.9	3.3
Bacterial Wilt	45	2.4	1.9	2.1

\*Percent of fields infected with only trace amounts of disease.

SUMMARY OF DISEASE SURVEY DATA - 1964 (Continued)

Disease	Percent of Fields Infected	Average Severity	Average Prevalence	Disease Index
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Iowa (Continued)

Stem Canker	32	2.2	1.2	0.8
Downy Mildew	21	2.5	2.5	1.3
Bud Blight	6	2.5	1.0	0.2
Wildfire	3	2.0	1.0	0.6
Yellow Mosaic	3	trace		

Indiana, July 28-31

Brown Spot	64	2.7	1.2	2.1
Downy Mildew	57	3.0	2.4	4.1
Bacterial Pustule	54	3.6	1.7	3.3
Bacterial Blight	44	2.5	1.4	1.6
Phytophthora Rot	11	2.9	1.6	0.5
Bud Blight	10	3.9	1.6	0.6

REGIONAL DISEASE REACTION TEST - 1964

Strain	Bacterial Blight		Strain	Bacterial Pustule	
	<u>Ill.</u> a <sup>1</sup>	<u>Ia.</u> a		<u>Ill.</u> a	<u>Ia.</u> a
P.I. 68521	1	3	P.I. 90763	1	3
68554	1	3	96333	1	
68708	1	2	153213	1	2
90763	3	2	215693	1	2
153213	3	2	Wayne (L57-2222)	1	1
166147	1	2	Harosoy 63	2	1
L56-1513	1	3	L2	1	1
L57-1885	2	2	Clark*	2	4
Hawkeye	2	4	Clark 63	1	1
Flambeau**	1	2	Scott	1	2
Lincoln*	3	4	Lee**	1	1

\*Susceptible check variety.

\*\*Resistant check variety.

<sup>1</sup>a = artificial inoculation.



WEATHER CONDITIONS AND GENERAL GROWTH RESPONSES AT MOST OF THE  
NURSERY LOCATIONS DURING THE 1964 SEASON

The following general notes compiled from information supplied by the cooperators may be helpful in interpreting performance of the nurseries at individual locations.

Temperature and rainfall at most of the nursery locations for the 1964 season are presented in graphs at the end of this section of the report. The daily maximum and minimum temperatures and rainfall are taken from "Climatological Data" published by the Weather Bureau.

Guelph, Ontario, Canada. Moisture conditions were good throughout the summer with above normal precipitation in August. August photosynthesis was reduced below normal due to two to three weeks of cloudy weather. Probably the early frost slightly reduced yields of later varieties.

Soil Type: Guelph loam.

Fertilizer Application: None.

Soil Analysis: pH, 7.3; OM, 3%; N, M; P, H; K, H-; Ca, H-; Mg, M.

Ridgetown, Ontario, Canada. The Uniform Tests were planted on May 25. Emergence was very good. Sevin was sprayed to prevent damage that might have been caused by the Clover Worm. Rainfall and temperature were adequate for good growth.

Soil Type: Brookston clay loam.

Fertilizer Application: 1500 lbs./A. 3-11-11.

Harrow, Ontario, Canada. Moisture conditions were good at the time of seeding. Emergence was rapid and uniform stands were established. Growth was slow during the early part of the growing season but improved during mid-summer. A wet spell in late August, with below average temperatures, delayed ripening. May through September precipitation was 14.3 inches compared to the long-term average of 12.6 inches. Temperatures were above average in May and July but below average in June, August, and September.

Soil Type: Brady sandy loam.

Fertilizer Application: 500 lbs./A. 5-10-15.

Freehold, New Jersey. The growing season was unusually dry in May, June, and August with July rain two inches above normal and September, normal. June and July temperatures were normal but August and September were three degrees below normal. One inch of irrigation water was applied to the research area on June 4 when it was obviously needed to promote seedling emergence. The stand in all plots was satisfactory but a variation of about one week in plant age was evident in many plots. Harvest conditions were excellent.

Soil Type: Sassafras sandy loam.

Fertilizer Application: 200 lbs. 0-20-20 one week before planting.

Soil Analysis: pH, 6.4; P, 15; K, 70; Mg, 75.

Newark, Delaware. When the 1964 climatological data is considered, it is surprising that growth of soybeans at this station was as near normal as it was. While temperatures were near normal throughout the summer months, only in July was near normal rainfall obtained. Rainfall during May and June was greater than three

inches below the normals in both months. Drouth was most severe during late August and early September when rainfall was limited and soil moisture was deficient. The early killing frost of October 12 had little if any effect on the later maturing Group IV lines.

Soil Type: Matapeake silt loam.

Fertilizer Application: 0-40-40.

Soil Analysis: pH, 6.3; OM, 3.0%; P, 187 lbs./A. (High); K, 209 lbs./A. (High); Mg, 422 lbs./A. (High+).

Georgetown, Delaware. Vegetative growth was near normal in 1964, but drouth in August and September had an adverse effect on seed size and hastened maturities of both the Group III and Group IV lines. Three irrigations of two inches each (three weeks following planting, before blooming, and after blooming) plus natural rainfall was insufficient to give optimum yields. Rainfall during the summer months was about twelve inches below the normal expected for this station. Temperatures were near normal. A rigorous spray schedule to control insects was maintained. The poor seed appearance evidenced in many of the lines was attributed to a heavy rain and high humidity period of three to five days which occurred about two weeks prior to harvest.

Soil Type: Norfolk sandy loam.

Fertilizer Application: 0-45-90.

Soil Analysis: pH, 6.1; OM, 1.5%; P, 432 lbs./A. (High+); K, 213 lbs./A. (High); Mg, 307 lbs./A. (High).

Upper Marlboro, Maryland. 1964 was a drouthy year; however, at this location, rainfall was intermittent and the soybean plants did not show visible signs of drouth. In fact, plants showed excellent growth. April through September rainfall was 3.82, 0.83, 2.59, 3.40, 1.75, and 5.16 respectively. This may be contrasted to the 1931-1962 average for the same six months as follows: 3.64, 3.75, 3.74, 4.30, 4.53, and 3.28. The killing frost on October 11 occurs with a probability of about 10 percent.

Fertilizer Application: 200 lbs./A. 4-8-12; 1 1/4 Tons of lime.

Soil Analysis: pH, 5.0; P<sub>2</sub>O<sub>5</sub>, 105 (M); K<sub>2</sub>O, 144 (M); MgO, 129 (M).

Hoytville, Wooster, and Columbus, Ohio. Unfavorable weather during April retarded spring field work and planting of soybeans was somewhat delayed. By late June, soybean growth was retarded by lack of moisture. Thundershower activity occurred during mid-July; however, continued below-normal rainfall during August and September further reduced yields. Soybean harvest was completed under very favorable conditions.

Hoytville--Soil Type: Hoytville clay.

Fertilizer Application: None.

Soil Analysis: pH, 6.1; OM, 3%; P, 32 lbs./A.; K, 294 lbs./A.; Mg, 740 lbs./A.; Mn, Trace; B, 1.25 lbs./A.

Wooster--Soil Type: Wooster silt loam.

Fertilizer Application: None.

Soil Analysis: pH, 7.1; OM, 2%; P, 82 lbs./A.; K, 156 lbs./A.; Mg, 360 lbs./A.; Mn, 87 lbs./A.; B, 0.50 lbs./A.

Columbus--Soil Type: Miami-Brookston silt loam.

Fertilizer Application: None.

Soil Analysis: pH, 6.2; OM, 3%; P, 82 lbs./A.; K, 222 lbs./A.; Mg, 480 lbs./A.; Mn, 32 lbs./A.; B, 1.0 lbs./A.

Bath, Michigan. Planting was timely on May 22 and frosts the first week of June did no damage, probably due to the plots being irrigated at night. A frost on June 25 did no damage. The first frost to burn the topmost leaves was on August 8. Flambeau had less leaf damage than Acme, but Acme pods were more mature. The severe freeze on September 11 and 12 stopped growth. Sclerotinia was not as evident in the field as last year but showed up in several of the seed lots.

Soil Type: Houghton muck.

Fertilizer Applications: 300 lbs./A. 0-10-20; 20 lbs./A. Mn in  $MnSO_4$  broadcast.

Soil Analysis: pH, 6.2; OM, 83.3%; P, 42; K, 132; Ca, 5772; Mg, 600.

East Lansing, Michigan. Planting was timely on May 28 and 29 but dry weather delayed germination. This dryness continued throughout the summer, as evidenced by the shortness of plants. The fall weather delayed maturity. The result was that the freeze October 6-7 caught the Uniform and Preliminary Tests I and II before they reached maturity. Uniform Preliminary Test 00 was grown on an area that apparently needed lime [Soil Analysis (a)], but the other tests were on better soil.

Soil Type: Brookston.

Fertilizer Application: 300 lbs./A. 6-24-12 broadcast +2% Mn.

Soil Analysis: (a) pH, 5.8; OM, 3.2; P, 87; K, 104; Ca, 1976; Mg, 192.

(b) pH, 7.0; OM, 3.6%; P, 53; K, 88; Ca, 2808; Mg, 320.

Dundee, Michigan. Dry weather of several days duration followed planting. There were some showers during the growing season, but in general it was dry. In spite of this, growth was good. The freeze of October 6-7 terminated growth and dry weather allowed the plants to dry out enough to be cut on October 14.

Soil Type: Hoytville.

Fertilizer Application: None.

Soil Analysis: pH, 6.7; OM, 5.1%; P, 42.0; K, 220; Ca, 4472; Mg, 535.

Walkerton, Indiana. Planting on May 22 was 10 to 12 days earlier than usual at this location. The soil was fairly dry and cloddy. Light rain on May 24 helped emergence some. Stands were spotty and emergence delayed in some areas of the plot, accounting for non-uniform maturity between replications in some varieties. The growing season temperatures were somewhat above normal with 40 days of 90° F. or above in the May through September period. May precipitation was only 0.86 inch which is 3.13 inches below normal. Growth-period precipitation totaled 3.52 inches below normal. An above normal 1.61 inches of rain in July was very important in producing slightly above average yields of about 40 bushels per acre for this location. Growth generally was good. There was light bacterial blight, and light to moderate downy mildew and brown spot infection. Since there was little or no rain in early September but frequent showers in the latter part, some varieties appear rather late in comparison with Harosoy 63 which matured ahead of the rains. Harvest was timely and harvest conditions good.

Soil Type: Maumee loam.

Fertilizer Application: None. Soybeans followed well fertilized corn.  
Soil Analysis: pH, 6.1; P, 127 lbs./A.; K, 132 lbs./A.

Bluffton, Indiana. Planting was timely on May 21 in a well prepared seedbed. Emergence and growth were good. Although 3% Mn was applied in the fertilizer, Mn deficiency was observed in Uniform Test III, especially in replication 1 and part of replication 2. Growing season temperatures were somewhat above normal with 42 days of 90° F. or above. High late-July and early-August temperatures, along with below normal rainfall in each growing season month for a below season normal of 2.84 inches, produced drouth conditions which reduced Uniform Test II yields about 5 bushels below average for this location. Uniform Test III was about 8 bushels below average. Growth through July was excellent. There was very slight brown spot and bacterial blight and light downy mildew infection. Phytophthora killed some plants of M402 in replication 1. No killing was observed elsewhere. Harvest conditions were excellent.

Soil Type: Nappanee silt loam.

Fertilizer Application: 100 lbs./A. 5-20-20 + 3% Mn.

Soil Analysis: pH, 6.8; P, 178 lbs./A.; K, 200 lbs./A.

Lafayette, Indiana. Planting was very timely on May 19 and 20 in a well prepared seedbed. Emergence was somewhat slow and spotty in some areas. Slow emergence prevented early cultivation and weeds were an early problem. Moderate to heavy hail occurred June 20 and did considerable damage in the plant-row area of the field and in several yield trials, especially in the Lindarin backcross and Harosoy backcross tests. Plant growing points and branches were broken off, leaving the above tests looking very ragged. Recovery was good, with a 41-bushel per acre average for the above tests. Temperatures were only slightly above normal. Precipitation was below normal in each month of the growing season and was 7.38 inches below normal for the season, giving marked drouth effects. Yields, generally, were much better than expected and were near the average for this location. Maturity of Group II and earlier varieties was somewhat ahead of normal. There was little infection from diseases except brown stem rot which was fairly prevalent in Group III and later varieties. Harvest conditions were good to excellent.

Soil Type: Chalmers silty clay loam.

Fertilizer Application: 165 lbs./A. 5-20-20 + 24 lbs./A.  $\text{MnSO}_4$ .

Soil Analysis: pH, 5.8; P, 77 lbs./A.; K, 130 lbs./A.

Greenfield, Indiana. Planting was very timely on May 18 but in soil that was somewhat cloddy. Emergence and stands were fairly good. Temperatures during the growing season were somewhat above normal with 36 days of 90° F. or above. Precipitation was below normal in each growing-season month and 6.25 inches below normal for the season. Growth through July was excellent. There was slight bacterial blight and light to moderate brown spot infection. Phytophthora was fairly severe in replication 1 of Uniform Test II and to some extent in the rest of the plot. The most marked effects were on M402 and A1-1051. There was no observable killing or evidence of depressed growth in Uniform Test III. Average yields for this soil type were low for Uniform Test II and somewhat below average for Uniform Test III. Harvest conditions were excellent and timely.

Soil Type: Brookston-Crosby complex.

Fertilizer Application: 250 lbs./A. 5-20-20.

Soil Analysis: pH, 6.4; P, 136 lbs./A.; K, 138 lbs./A.



Worthington, Indiana. Planting was a little late on May 26 in a well prepared seed-bed. Emergence and growth were excellent. These were the best tests ever grown at this location. The average yields of all tests was about 49 bushels per acre. Temperatures were above average, reaching 102° F. on a single day in early August, with 41 days of 90° F. or above during the growing season. Precipitation was 2.52, 2.59, and 2.24 inches below normal in May, August, and September, respectively, and 0.63 and 0.24 inches above normal in June and July. Downy mildew was the only disease of any consequence and rated above 4 on the more susceptible varieties. Early September drouth conditions followed by frequent showers the latter part of the month apparently caused numerous varieties to retain green stems after maturity. Harvest conditions were excellent and timely.

Soil Type: Genesee silt loam.

Fertilizer Applications: 8 Tons manure + 150 lbs./A. 5-20-20.

Soil Analysis: pH, 7.8; P, 352 lbs./A.; K, 194 lbs./A.

Evansville, Indiana. Planting was somewhat early on May 14 in a moderately good seedbed. Emergence and growth through July were very good. August drouth conditions were probably most responsible for reducing average yields at this location by 15 to 20%. Precipitation was about seven inches below normal for May through mid-September. July and August were hot with the temperature reaching 102° F. on a single day in early August. There were 62 days with 90° F. or above in the growing season. Downy mildew was fairly severe and rated 4 or above on susceptible varieties. Phytophthora was evident, with killed plants in spotted areas throughout the plot. There was considerable lodging observed July 30, but this was about average at harvest. Harvest conditions were good and timely.

Soil Type: Montgomery silty clay loam.

Fertilizer Application: 200 lbs./A. liquid 5-15-8. Sprayed with 10 lbs./A.  $\text{MnSO}_4$ .

Soil Analysis: pH, 6.1; P, 530 lbs./A.; K, 177 lbs./A.

Ashland, Wisconsin. Plant growth in the soybean nursery was very variable this year. In some cases, within a 20-foot row, one variety of soybeans would range in height from 16-32 inches, or from 18-33 inches. In part, this variability was due to abnormal weather conditions during the growing season. We received twice the normal rainfall in April and May and about one-third the normal rainfall for June and July. This latter period gave us just under three inches of rain for a ten-week period. August had above normal rainfall and September had twice the normal rainfall. The growing season's temperatures were nearly normal except for August which averaged 3.6° F. below normal.

Soil Type: Ontonagon silty clay loam.

Fertilizer Application: 300 0-20-20.

Soil Analysis: pH, 6.1; OM, 24; P, 100; K, 330.

Spooner, Wisconsin. The temperatures in May were 4.1 degrees above normal and the average rainfall was 2.4 inches above normal, which created ideal planting conditions in this type of sandy soil. Temperatures were normal in June but rainfall was 2.4 inches below normal. However, no damage was visible by these drouth conditions. July was hot and dry, temperatures were 1.7 degrees above normal and rainfall was one inch below normal, almost half of the total rainfall for the month occurring the 24th. The nursery was irrigated July 10. Rainfall in August was about normal, 4.21 inches, with very good distribution. Temperatures averaged 3.5

degrees below normal. Temperatures in September were 2.2 degrees below normal but rainfall was 1.79 inches above normal. The first 14 days were cloudy and rainy and maturity of beans advanced very slowly. A killing frost of 24 degrees occurred on the 15th. Only the earliest varieties had begun turning color at this time.

Fertilizer Application: 200 lbs. 5-10-30.

Soil Analysis: pH, 6.9; OM, 22; P, 160; K, 160.

Madison, Wisconsin. The soybean nursery was planted May 19. Temperatures during the period May through August averaged about three degrees above normal, whereas September and October temperatures were below normal. During the period, April through September, the rainfall was two inches below normal. The plots suffered from drouth during the period, June 23 to July 26, and again during the first three weeks of August. Growth during the entire season was poor, plant height being from one-half to two-thirds of normal. Part of this appeared to be due to residual herbicide effects and part due to low fertility and lack of moisture. Early varieties suffered more than late varieties. Late varieties benefited from 1.78 inches of rain on August 20.

Soil Type: Miami silt loam.

Fertilizer Application: 200 0-20-20.

Soil Analysis: pH, 7.5; OM, 24; P, 100; K, 125.

Shabbona, Illinois. Planting was on May 18 in a rough but moist seedbed which dried rapidly, giving rather uneven stands. Growth was good, with lodging starting in early August. Insect damage was negligible. There was a light epiphytotic of downy mildew, Phyllosticta, and stem canker. Bacterial blight was severe in places in the field.

Soil Type: Flanagan silt loam.

Fertilizer Application: None.

Soil Analysis: pH, 6.9; P<sub>1</sub>, 12; P<sub>2</sub>, 125; K, 276.

Dwight, Illinois. Planting was delayed until June 16, due to very dry weather. The seedbed was rough with limited moisture, but adequate stands were obtained. Moisture was inadequate the first six weeks but adequate in August. There was very good lodging differential among strains and very good yields for a late planting date. Susceptible strains had moderate bacterial pustule, downy mildew, and bacterial blight. Frost the first week in October may have affected yield of some of the late strains.

Fertilizer Application: 1 1/2 Tons of manure/A.

Soil Analysis: pH, 6.7; P<sub>1</sub>, 45; P<sub>2</sub>, 115; Flame K, 312.

Urbana, Illinois. Planting was on May 11 in an excellent, moist seedbed and emergence and stands were good. The available moisture was critically short most of the season, causing a reduction in seed production. There was a light epiphytotic of downy mildew, and stem canker was severe in the area of Preliminary Tests II and III but slight to moderate in the Uniform Test area.

Soil Type: Drummer silty clay loam and Flanagan silt loam.

Fertilizer Application: None.

Soil Analysis: pH, 5.9; P<sub>1</sub>, 58; P<sub>2</sub>, 111; Flame K, 320.

Girard, Illinois. Planting was on May 21 in a moist, well prepared seedbed. Moisture was adequate through June. July and August were very dry. Plants were standing unusually well for this location. There was slight to severe bacterial pustule, slight to moderate bacterial blight, and a general epiphytotic of downy mildew. In late August, severe brown stem rot was found in almost all plants examined. Rain started at the time Group II matured and continued for three weeks so that harvesting was delayed and some of the Groups II and III strains shattered.

Fertilizer Applications: 150 lbs. 82% anhydrous, 120 lbs. 4670 Triple super phosphate, and 120 lbs. 60% potash.

Soil Analysis: pH, 6.7; P<sub>1</sub>, 31; P<sub>2</sub>, 104; Flame K, 220.

Edgewood, Illinois. Planting was on June 2 in an excellent, moist seedbed and emergence was very good. Downy mildew was slight but general. Bacterial pustule was slight to severe and there was slight to moderate bacterial blight and brown spot. Harvest conditions were very good.

Fertilizer Application: 115 lbs. 60% potash.

Soil Analysis: pH, 6.4; P<sub>1</sub>, 12; P<sub>2</sub>, 120; Flame K, 128.

Eldorado, Illinois. Planting was on June 4, somewhat late due to lack of soil moisture. A good seedbed with moisture one inch from the surface produced good stands. Late July and August were very dry, causing reduction in yields of the earlier maturing varieties. Downy mildew, bacterial blight, and bacterial pustule occurred with severities ranging up to slight, severe, and moderate, respectively. A slight to severe leaf "puckering" that resembled soybean mosaic occurred generally over the field. Frost may have lowered yields of the late Group IV varieties.

Fertilizer Application: 300 lbs./A. of 10-12-12.

Soil Analysis: pH, 6.7; P<sub>1</sub>, 31; P<sub>2</sub>, 130+; Flame K, 240.

Carbondale, Illinois. Planting was made during the latter part of May and emergence was fair, due to a rain shortly after planting which caused soil crusting. During the early part of the growing season, growth was about normal, but the lack of sufficient rain during August prevented maximum growth and resulted in a reduction in yield. Seed quality was fair.

Soil Type: Stoy silt loam.

Fertilizer Application: 300 lbs./A. 0-20-20.

Soil Analysis: pH, 6.4.

Miller City, Illinois. Planting was on May 15 in an excellent, moist seedbed and emergence and stands were very good. Adequate moisture and the high fertility level of this location contributed to rank growth and very good yields. The only disease noted was a light epiphytotic of downy mildew. An early frost damaged the Groups V and VI varieties.

Soil Type: Riley fine sandy loam.

Fertilizer Application: None.

Soil Analysis: pH, 6.3; P<sub>1</sub>, 97; P<sub>2</sub>, 130+; Flame K, 360.

Crookston, Minnesota. Drouth very definitely reduced plant yields this year. The Group 00 test matured satisfactorily and relative yields should be meaningful. The Group 0 test was hit by a mid-September frost; hence, the test was discarded.

Soil Type: Fargo silty clay loam.  
Fertilizer Application: None.

Morris, Minnesota. This was a fair to good year but a little more moisture in August was needed. Yield comparisons should be valid. Bacterial blight infection was prevalent early in the season, associated with the cool wet weather. M417 was severely hit with blight early in the season and it could have been a factor in its poor performance in this test. Also, there was a fairly hard frost September 15 which may have hurt M417.

Soil Type: Baines silt loam.  
Fertilizer Application: None.

St. Paul, Minnesota. Drouth was a major factor affecting yields. Group 0 was affected the most and, therefore, discarded. Group 00 was early enough to fill pods before the drouth stress became too great, and Group I was late enough to benefit from the late August rains. Although there may be some drouth-variety interaction, especially in Group I, the relative yields are fairly reliable.

Soil Type: Waukegan silt loam.  
Fertilizer Application: Manure.

Lamberton, Minnesota. Moisture stress reduced yields somewhat, but yields should be reliable.

Soil Type: Nicolett clay loam.  
Fertilizer Application: None.

Waseca, Minnesota. This was a normal to good year, although yields might have been higher with a little more timely moisture. The data should be reliable.

Soil Type: LeSueur silty clay loam.  
Fertilizer Application: None.

Cresco, Iowa. This nursery is located in northeast Iowa on Cresco loam soil which is tight, cold, wet, slowly drained, and low in productivity. The nursery was planted on May 22 on corn land. Stands were good and weeds controlled. Precipitation averaged 3.8 inches above normal, and temperatures departed 1.1° above normal for the growing season. In spite of the above normal precipitation, growth response and yields averaged very near normal. Below normal July rains and near normal rains in August and September helped to make this possible. Light frost injured a few later-maturing strains. This nursery was considered good for making strain comparisons.

Soil Type: Cresco loam.  
Fertilizer Application: 46 lbs. K/A.  
Soil Analysis: pH, 6.8, OM, Medium; N, 86 lbs./A.; P, 21 lbs./A.; K, 145 lbs./A.  
Soybean Yields (Long-time Average): 23 bu./A.

Sutherland, Iowa. This nursery represents the northwest section of Iowa with Primghar silty clay loam soil, medium high in productivity, and generally slightly undulating in topography. The nursery was planted May 20. Stands were excellent and plots were kept weed-free. Precipitation was slightly below normal for May,



June, and August and above normal for July and September, which gave a season's average of 4.8 inches above normal. Temperatures for May through September averaged near normal with May and August departing greatest with + 4.0° and -3.9° F, respectively. Frost occurred later than normal after all strains were mature. Growth response and yields were below average. Disease was of little consequence throughout the season. This nursery was considered good for making strain comparisons.

Soil Type: Primghar silty clay loam.

Fertilizer Application: None.

Soil Analysis: pH, 6.8; OM, Medium to high; N, 126 lbs./A.; P, 18 lbs./A.; K, 220 lbs./A.

Soybean Yields (Long-time Average): 38.0 bu./A.

Kanawha, Iowa. This nursery is located in north-central Iowa on level, productive Webster silty clay loam. Planting was completed on May 18 on land previously grown to corn. Stands were generally good to excellent and plots were kept weed-free. There was a moderate amount of bacterial blight in the nursery. During the growing season temperatures averaged near normal with most of the cool temperatures occurring in August and September. Although precipitation was deficient in May and June, all other months were above normal with September 5.1 inches above. The overall average from May through September was 1.8 inches above normal. These conditions permitted slightly above average growth and yields. A later than normal frost permitted all strains to mature. Harvesting was completed under good conditions. This nursery was considered very good for making strain comparisons.

Soil Type: Webster silty clay loam.

Fertilizer Application: None.

Soil Analysis: pH, 6.6; OM, High; N, 152 lbs./A.; P, 38 lbs./A.; K, 209 lbs./A.

Soybean Yields (Long-time Average): 33.0 bu./A.

Independence, Iowa. This nursery is located in northeast central Iowa on well drained Kenyon loam, medium in productivity. Planting was completed on May 22. Stands were good and plots were kept weed-free. Temperatures averaged 2.8° F. above normal. Precipitation was a little below normal most growing months and departed -1.1 inches below normal for May through September. Growth, yield, and general response was considerably below normal. Strains, except very late ones, were not injured due to frost. This nursery was considered good for making strain comparisons.

Soil Type: Kenyon loam.

Fertilizer Application: 40 lbs. K/A.

Soil Analysis: pH, 6.9; OM, Medium; N, 86 lbs./A.; P, 21 lbs./A.; K, 145 lbs./A.

Soybean Yields (Long-time Average): 33.0 bu./A.

Ames, Iowa. This nursery is centrally located on level, productive Nicollet loam. Planting was completed on May 15 with subsequent stands excellent. Temperatures averaged near normal for the growing season from May through September with May and August departing greatest with +5.3 and -4.4° F., respectively. Precipitation for May through September was 2.3 inches above normal. June and July had the greatest departures above normal. Growth, yield, and general response was a little below normal. There was a low incidence of diseases other than brown stem rot, which occurred rather uniformly heavy. Later strains were more severely affected than

early ones. Later than normal frost permitted all strains to mature. Strain comparisons are believed to be good.

Soil Type: Nicollet loam.

Fertilizer Application: 3 Tons/A. lime.

Soil Analysis: pH, 6.5; OM, Medium to high; N, 110 lbs./A.; P, 41.6 lbs./A.; K, 177 lbs./A.

Soybean Yields (Long-time Average): 38.0 bu./A.

Ottumwa, Iowa. This nursery is in southeastern Iowa on flat, very productive Haig silty clay loam. The nursery was planted May 16. Transplanting was made for satisfactory stands and weeds were controlled. Temperatures averaged near normal with May +5.1 and August -3.7° F. Precipitation averaged below normal for May through September (-2.0 inches) with the greatest departures occurring in May (-1.5) and June (+1.3). Growth and yield response were normal because deficits were not severe in any month. Seed quality was very poor and more pronounced in later strains--mostly bleeding of hila and defective seed coats--believed to be due to some peculiar environmental condition. This caused a loss in yield estimated at 10 to 20%. Lodging was light, which is not normal. Killing frost occurred October 9 (normal October 10). Strain comparisons are believed to be good.

Soil Type: Haig silty clay loam.

Fertilizer Application: None.

Soil Analysis: pH, 6.8; OM, Medium to high; N, 102 lbs./A.; P, 52 lbs./A.; K, 232 lbs./A.

Soybean Yields (Long-time Average): 40.0 bu./A.

Portageville, Missouri. Above normal temperatures and adequate soil moisture at planting (May 18-19) resulted in rapid germination and excellent stands. Rainfall during May and June was well below normal and all plots were furrow-irrigated on June 27. Above normal precipitation fell during July and September, delaying maturity and harvesting of Group IV material. October was extremely dry, with only traces of rain falling on three days. Temperatures averaged 2.5 to 3 degrees above normal during May and June but was well below normal over the balance of the season. Departures from normal were -2.6 degrees in August, -2.0 degrees in September, and -3.9 degrees in October.

Soil Type: Salix silt loam.

Fertilizer Application: 50-50-50 per acre.

Soil Analysis: pH, 5.0; OM, 1.3; P, 212 (High); K, 220 (Medium); ca, 2500 (Medium); Mg, 300 (High).

Winnipeg, Manitoba, Canada. Temperatures were 2.3°, 4.3°, and 3.3° F. below normal in June, August, and September, respectively. Precipitation was below normal in May, July, and September, but above normal in June. The tests were seeded on May 21. The preceding crop was barley. Spring cultivation resulted in a dry seedbed. Therefore, approximately one inch of water was applied on May 28 to facilitate uniform emergence. Emergence and early growth was very uniform. A hail storm occurred on August 2 and resulted in moderate hail damage. The first killing frost occurred on September 14. The relatively poor performance of late maturing varieties probably was due to relatively low temperatures during the growing season, which tended to delay maturity, and to frost damage which occurred on September 14.

Soil Type: Riverdale silty clay.  
Fertilizer Application: None.

Brandon, Manitoba, Canada. There was ample moisture at the time of seeding, and emergence was good. There was a four-week dry, windy period following the date of seeding which retarded plants during the early part of their development. Rainfall was satisfactory, both in amount and distribution, from June 8 to harvest time. The season was much cooler than average. An early frost occurred on August 12 (32° F.), and cool wet weather from mid-August until harvest prevented good maturation of seed. Plants appeared to develop well throughout the season and there were no insect problems. Disease was less than normal but plants remained in vegetative development too long and reproductive development was thereby restricted.

Soil Type: Fine textured Assiniboine clay loam on alluvium.  
Fertilizer Application: None.

Morden, Manitoba, Canada. The Uniform and Preliminary 00 Tests were grown on land seeded to flax in 1963. The soil was rather lumpy and dry at seeding time, resulting in slow and uneven emergence. The very cool temperatures during May and June also contributed to slow growth. By mid-June the rains came, followed by warm humid conditions till the end of July. Soybeans grew very rapidly, resulting in healthy tall plants. All of August and September were considerably below normal in temperature, resulting in immature plants being caught by frost on September 14. Yields were therefore much below that of 1963. Bacterial blight was present in fair amounts on all varieties.

Soil Type: Morden heavy clay loam.  
Fertilizer Application: None.

Fargo, North Dakota. Temperatures were above average during May, June, and July and were below average during August and September. Precipitation was below average during May, resulting in a dry seedbed. The plots were artificially watered during the last week of May. This amounted to about one inch of rainfall and resulted in plant emergence. Precipitation was above average during June, below average during July, and near average for September. Delayed emergence and adverse weather conditions had a detrimental effect on seed yield. A killing frost occurred September 14.

Soil Type: Fargo clay.  
Fertilizer Application: None.

Casselton, North Dakota. The strains in Uniform Test 0 were planted May 13, 1964. This test was abandoned on June 15 due to very uneven emergence. Some plants were five to six inches high while many others were just emerging, primarily because of uneven soil moisture conditions.

Soil Type: Bearden silty clay loam.  
Fertilizer Application: None.

Eureka, South Dakota. The 1964 season was poor for soybeans at Eureka. The soil moisture at planting was good, giving rapid emergence and good stands, but rainfall was less than 50 percent of normal from early July through mid-September. The

month of August was very cool with temperatures averaging well below normal ( $-4.4^{\circ}$  F.) and with a light frost on August 13. Seed yields were low with considerable immaturity resulting in shrunken beans at time of harvest. Strain comparisons are questionable due to the immaturity at killing frost on September 11 and due to drouthy conditions during the period from flowering to maturity.

Soil Type: Williams loam.

Fertilizer Application: None.

Watertown, South Dakota. The 1964 season was poor for soybeans at Watertown. Soil moisture at planting was sufficient to allow rapid emergence and good stands, but insufficient to support normal development until the first appreciable rainfall nearly a month after planting. The mean temperature was well below normal during July and August ( $-4.4^{\circ}$  F.) resulting in very slow development from flowering to maturity. Strain comparisons are questionable, especially for Group I beans, due to immaturity at killing frost on September 11.

Soil Type: Kranzburg silt loam.

Fertilizer Application: 60-40-0.

Brookings, South Dakota. The 1964 season was about average for rainfall at Brookings, but temperatures were well below normal during the month of August ( $-5.0^{\circ}$  F.), causing delayed maturity and some reduction in yield. Strain comparisons should be good, and the killing frost on September 27 caused no damage to nearly mature beans.

Soil Type: Vienna loam.

Fertilizer Application: 32-40-0.

Centerville, South Dakota. The 1964 season was about average for rainfall and temperature at Centerville except for cool weather through the month of August ( $5.1^{\circ}$  F. below normal) which caused some reduction in seed set and some delay in maturity, with a slight reduction in yield. Strain comparisons should be good, and the killing frost on September 27 caused no damage as the beans were essentially mature by that time.

Soil Type: Poinsett sandy loam.

Fertilizer Application: 32-40-0.

Mound Valley, Kansas. During the early part of the growing season, soil moisture was adequate to obtain good stands and early growth. High temperatures and limited rainfall between July 15 and August 15 restricted plant growth to some extent. Date of maturity was difficult to establish. All selections appeared to mature at the same time because of the extremely dry weather during September and October. Plants ceased growth rather than maturing naturally.

Soil Type: Parsons silty clay loam.

Fertilizer Application: 0-30-30.

Soil Analysis: pH, 5.8; OM, 1.6; P, 21; K, 142.

Grand Junction, Colorado. From the standpoint of temperature and other climatic factors, the season seemed to be about average. Nodule formation, a problem in past years, was quite adequate. Insect or disease problems were not encountered during the season. Irrigations were applied on the following dates: May 24,

June 2 and 30, July 22, and August 15. The explanation for the low yields obtained from this test is unknown.

Soil Type: Hinman clay loam.

Fertilizer Application: 85 lbs.  $P_2O_5$ /A.

Ontario, Oregon. Planting on May 9 to 13 was timely, emergence was rapid, and stands excellent. A cloudburst on May 27 stripped the small plants of most of the foliage and was followed by an extremely cool, wet period that extended through most of June. Every month in the growing season except July averaged two to three degrees below normal in temperature. July was just normal. A second cloudburst on July 29, accompanied by high winds, flattened all area crops including the entire soybean nursery. Some lines recovered to a degree. The nursery was irrigated seven times, each sufficient to saturate the top two feet of soil (approximately 4" per irrigation). Irrigation dates were June 26, July 3, 11, and 22, and August 3, 14, and 25. Mites were present late in the season and some Sclerotinia was observed at harvest. The nursery was considered poor for making strain comparisons.

Soil Type: Owyhee silt loam.

Fertilizer Application: Approximately 80 lbs./A.  $P_2O_5$ .

Soil Analysis: pH, 7.4.



